

APRIL 1960

# *Material Handling ENGINEERING*

Established in 1945 as FLOW Magazine

STEVENSON RICE  
UNIVERSITY MICROFILMS  
313 NORTH FIRST ST  
ANN ARBOR MICH 48106  
FIZ

The High Cost  
of FREE  
Engineering

PAGE 58

Also in this issue . . .

How to Fit Plant Power  
to Handling Requirements  
page 64

Will Renting Cut Your  
Maintenance Costs?  
page 73

Applying Engineering  
Principles to Packaging  
page 86



AN INDUSTRIAL PUBLISHING CORPORATION MAGAZINE

**The original publication of the material handling industry, preferred by identified buyers of material handling, packaging and shipping equipment and supplies.**

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# Move 'em...

# Stock 'em... in Quantity...

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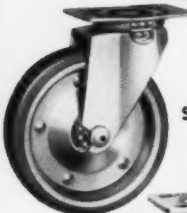
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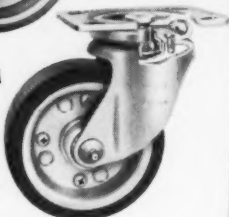
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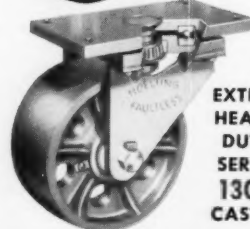


**LIGHT  
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L900  
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**EXTRA-  
HEAVY  
DUTY  
SERIES  
1300  
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Casters illustrated are typical of complete range of load capacities and types available for every materials handling job.





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These Xtra-Service, Xtra-Capacity advantages are yours only with *Neothane*—the new Goodyear polyurethane that wears like iron, but has the quiet resilience of rubber.

FOR MORE INFORMATION on this amazing new tire—and how it can save for you—write Goodyear, Industrial Tire Sales, Akron 16, Ohio.



INDUSTRIAL TIRES BY

# GOOD YEAR

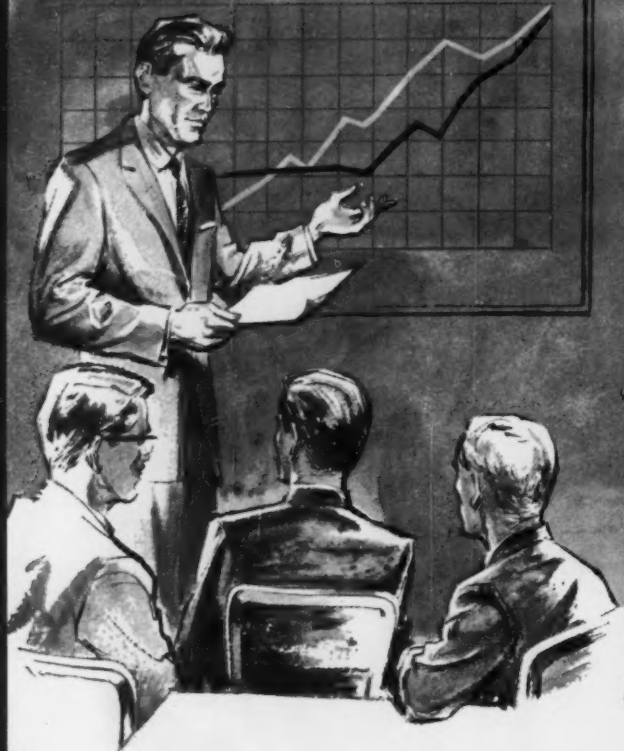
Neothane—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

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APRIL, 1960

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They ALWAYS Agree....



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Why? Because Palletainers have simplified materials handling problems for thousands of plants in scores of industries. These versatile, practically indestructible containers can save you time, money and manpower on in-plant transport, on the production line, in storage and shipping.

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USP Palletainers are available in a wider range of sizes, types and capacities to match each specific plant need. Why not survey your plant today and you'll soon agree, Palletainers can save your dollars and man hours so many ways.



Hi-Lode  
2,000—4,000—6,000 lbs.  
Capacities



Bearing Plate  
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Capacities



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2,000—4,000—6,000 lbs.  
Capacities



Warehouse  
3,000—4,000 lbs.  
Capacities



All Palletainers fold down to save approximately 75% of return shipping or storage space.



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Gentlemen: Please send me complete information on USP Palletainer applications. ☐

Please have one of your materials handling engineers contact me at once. ☐

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Company \_\_\_\_\_

Address \_\_\_\_\_

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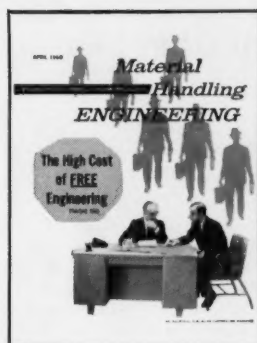
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Palletainers are manufactured in Canada by:  
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reader's guide to

for April 1960



**COVER:** The material handling engineer behind the desk is using a valuable service; engineering help from his suppliers. A steady stream of sales engineers to his office identifies him as a *Scatter Shot Requisitioner*. He and others like him who are responsible for the high cost of free engineering are described in the feature article starting on page 58.

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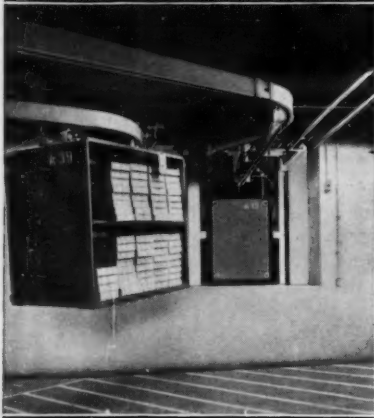
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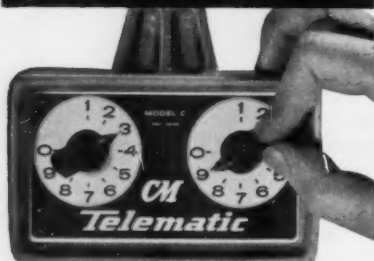
**BPA**

# Power -Flex

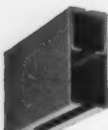
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TONAWANDA, N. Y.

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## Material Handling Engineering

volume 15 number 7

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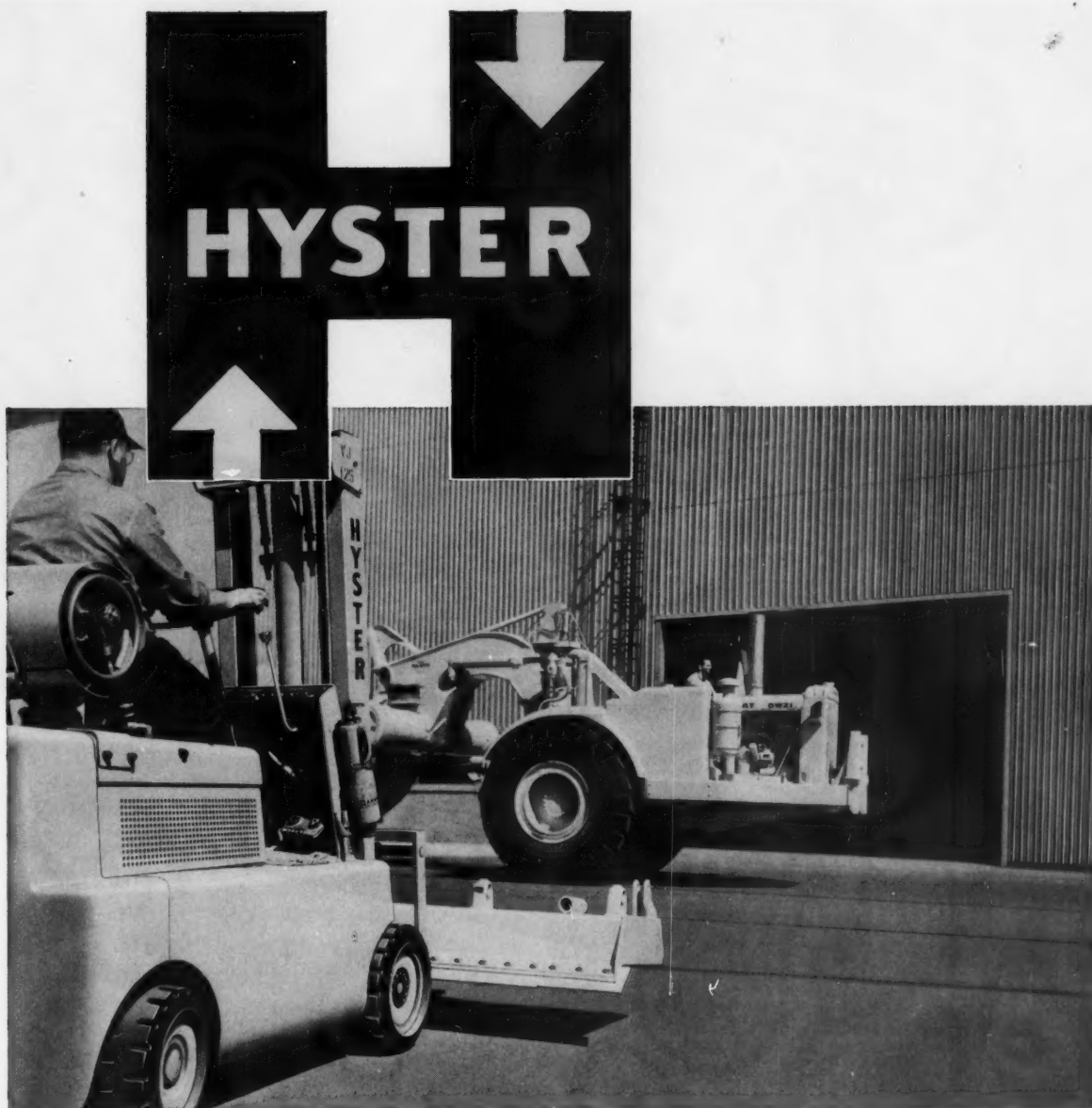
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### NEXT MONTH IN MHE

Professor Eugene Richman of New York University will explain a system of organizing and evaluating plant layout factors. His article will include a chart you can use for your own plant layout problems. Also in our May issue: another article in the Power Series, this one concerning motor selection for conveyors.





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With Standard's unique Handidrive units you can install a conveyor system to meet specific materials handling needs today . . . tomorrow . . . in years to come. You simply order pre-engineered, prefabricated, interchangeable units to which additions or alterations can be made as needs arise. And you can do this at savings up to one-third of conventional costs.

The "do-it-yourself" buyer-user will find Handidrive conveyor assembly fast and easy. These pre-engineered stock conveyor systems include: roller con-

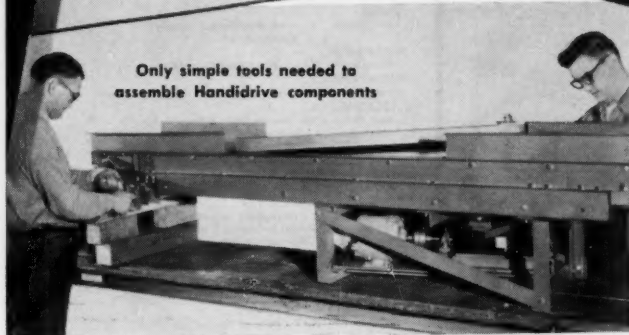
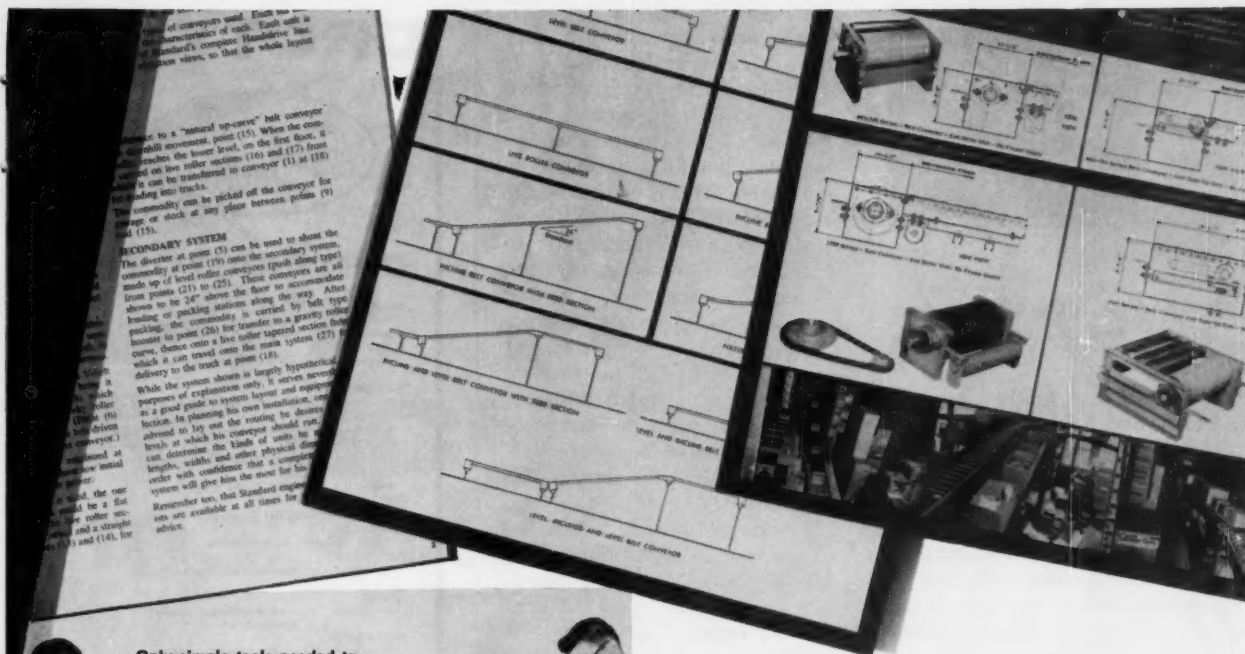
veyors (either gravity push-along or live roller types), inclined belt conveyors, drive units, intermediate sections, curved sections, supports, hangers and other necessary items.

Why not put a new dimension of profit into your materials handling operations. Get Standard's new Handidrive handbook . . . free of charge, of course.

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- ✓ Lower initial cost . . . you buy only what you need
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- ✓ Most complete line of fully integrated units—from one source

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## Ready-built, ready-to-ship HANDIDRIVE components meet your exact needs

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**Channel steel frames** are available in standard unit lengths from 5' to 10', in one-foot increments, to make up the conveyor length you need.

**Auxiliary units** include: curved and tapered sections, stands or supports, hangers, guardrails, feed sections, diverters, etc.

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*Sales and Service in Principal Cities*

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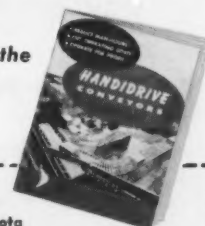
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**"DO-IT-YOURSELF" PLAN** — After you have determined your conveyor requirements, merely select your pre-engineered, prefabricated units from specifications given in the Handidrive handbook.

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Send for your personal copy of the  
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### STANDARD CONVEYOR COMPANY

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Please send me your HANDIDRIVE handbook.

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ADDRESS.....

CITY.....ZONE.....STATE.....



## LETTERS to the EDITOR

### WANTS MH Cost Standards In Lumber Industry

SIR:

I have just finished reading Views and Trends, "Let's Cut the Confusion". I am in complete agreement with your thinking throughout the article.

If a simple method of formulating materials handling expenses into proper categories so that they might be correctly expensed were discussed it would do more for the economy of the United States than many of the big programs we are working on today.

I for one feel that a great portion of the profit lost in my own industry (retail lumber and building supplies) is due to improper materials handling and that this profit loss is further emphasized by lack of control or method of determining true materials handling cost, particularly in the smaller operations.

We in the materials handling department of NRLDA wish to contribute in helping you establish a reasonable basis of comparison for materials handling costs and point up materials handling as a management function.

James V. Wright  
Material Handling Director  
National Retail Lumber  
Dealers Association

### Encore the Air Force

SIR:

As you may know, the U. S. Air Force has long been trying to improve its material handling facilities at base level. We have made some progress but it is far from satisfactory from our viewpoint. At the Strategic Air Command, we have made tremendous progress towards automating our supply accounting functions, and when our warehousing fa-

cilities are compared to it, they have become antiquated.

The problems we have at an actual operating base are probably as difficult to solve as any material handling problem in our nation. This is caused by the fact that our storage and issue system requires versatility to handle the entire range of sizes, shapes, and turnover. I feel it is virtually impossible to completely solve our problems, but on the other hand, I am sure we can make many great improvements. We want to automate every portion of our warehousing system which is economically possible.

I am particularly interested in finding or developing some sort of storage mechanism which can automatically eject different sizes, quantities and shapes of relatively small materials and bring these materials forward to a master segregating area. I want to do this automatically from a remote location and do it so economically that I will have no problem convincing the Air Force we should adopt this system. Due to your wide coverage in this field, I hope you can provide me with either booklets on this area or a list of your subscribers who manufacture this type of equipment.

Capt. William J. Nassif  
Base Supply  
Beale Air Force Base, Calif.

*We're well aware of Air Force progress in material handling (see MHE, Dec. '59). Several articles published recently on this subject have been sent.*

### Yes, We Have Consultants List

SIR:

Occasionally we have need for consulting services in the material handling field, and we are wondering if you could furnish us with a list of consulting engineers or consulting engineering firms who specialize in the material handling field.

Any assistance you can give us will be greatly appreciated.

G. S. Dunford  
Champion Paper & Fibre Co.  
Pasadena, Texas

(Continued on page 10)

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MATERIAL HANDLING ENGINEERING



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**MANUFACTURING CORP.**

*Materials Handling Division*  
Milwaukee, Wisconsin



The Rotelift boom smoothly extends or retracts free or under load.

Boom extension is hydraulically controlled by this lever.



**Go-Devil's  
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360° of it!



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got lift...**

15' of it!



**Go-Devil's  
got haul...**

4000 lbs. of it!



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The load will be accurately weighed as it's moved, saving you time and money.

THE NEW ISO-SEAL® CRANE SCALE is the most accurate crane scale on the market. It is more sensitive and yet more durable. It has accuracy you can SEE—because the dial (16") has large, easy to read graduations. You get guaranteed, legal weights with the Iso-Seal® scale because it meets all requirements of Handbook H-44 of the National Bureau of Standards.

5 Capacities from 6,000 lbs. to 30,000 lbs.

This scale has been approved by States' Bureau of Weights and Measures as legal for use in trade.

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85 CLIFF STREET, NEW YORK 38, N.Y.

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## LETTERS TO THE EDITOR

(Continued)

### A Question From Denmark on Tractors . . . And the Answer

SIR:

We have with interest read the article "The Never Idle Tractor," in the September edition of MHE and would ask you kindly to produce further details from the manufacturers with regard to the use of tractors and trailers instead of fork trucks, especially with a view to the economical facts.

T. Gersner  
Danfoss  
Nordborg, Denmark

*The editors put this question to several manufacturers, with this interesting reply:*

SIR:

Mr. Gersner mentioned in his letter the economics involved in using tractors and trailers "instead of" fork lift trucks. Actually, platform trucks and trailers do not compete with fork lift trucks — they supplement them. The fork lift truck should be used, as its name implies, for lifting; ie. for loading and unloading or for stacking and removing materials from storage areas. If the lateral travel distance between pickup and deposit of loads becomes too great, a fork lift truck is too expensive for this service because of its high initial cost and limited payload area. In this case a \$9,000 fork lift should be used to place several of its loads upon one \$2,000 platform truck. Both machines will perform their specific functions more efficiently, and their useful life will be extended appreciably because they are doing the work for which they are designed. The ratio of preventive savings is, of course, much greater in the case of the higher priced fork lift.

We hope this information will prove enlightening and useful to Mr. Gersner.

Howard Worst  
The Prime-Mover Co.  
Muscatine, Iowa



## LEASE...RENT...or BUY

### *Your Material Handling Equipment*

Towmotor Corporation and its subsidiary Gerlinger Carrier Company offer you three simple ways to improve your material handling operations . . . realize immediate savings . . . and accomplish this with little cash outlay.

1. You can put Towmotor-Gerlinger material handling equipment—fork lift trucks and material carriers—to work on a continuous round-the-clock basis through the Lease-A-Truck Plan. No down payment—no working capital tied up—just a small monthly charge.
2. You may also *rent* Towmotor-Gerlinger equipment on a short-term basis—as peak or seasonal demands require. You will start lowering handling costs immediately.
3. You can own new Towmotor-Gerlinger equipment by making reasonable monthly payments through

the Towmotor-Gerlinger Time Payment Plan. Low interest rates make it easy.

Complete factory supervised maintenance can be included in any of the above plans.

You'll find Towmotor-Gerlinger handling economies consistently pay the small monthly cost many times over. For complete information on any of these profitable, money saving plans, write or contact Towmotor-Gerlinger Rental Division, Towmotor Corporation, Cleveland, Ohio.



**FORK LIFT TRUCKS, CARRIERS AND TRACTORS SINCE 1919**  
Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation



# ROBO- LIFT

Probably the most efficient distance between any two points . . . You can see it at work for leaders in virtually any industry—moving powders, pellets, granules or solids—almost anything that freely flows—quickly, smoothly and undisturbed through vertical, inclined or horizontal planes for any distance. For instance: interlocking stainless steel buckets of a number of sizes are filled by vibratory, belt or gravity feeds from top or underside of in-feed section at any number of stations . . . discharge at a multiple number of locations. Foods, drugs, chemicals . . . auto parts and cereals . . . confections and cake-mixes are handled without risk of separation of ingredients. Batching is simplified. Speed is matched to optimum speed of processing or packaging machines; it stores products in its own buckets, or conveys to assembly points for temporary storage. Robo-Lift eliminates re-handling; links production to packaging; unifies and automates virtually any operation . . . needs but a fraction of floor space required for less flexible conveyors.



**20 STANDARD MODELS—CAPACITIES:** from 1.0 cfm to 40 cfm; 90 or 70 degree elevating angle; 10, 15, 20, 24 and 30 inch bucket sizes, stainless steel, or mild carbon steel; top and underdumps, height and length to meet any requirement.

**ENGINEERING SERVICES:** Free analysis and custom design for special problems; specifications for special bucket materials, enclosures, drives, feeds and discharge arrangements—at no extra charge.

Send for six page folder telling complete story of Lynch Robo-Lift at General Mills.

**LEADERS LOOK TO LYNCH—**  
**FOR MACHINES THAT PACKAGE ALMOST EVERYTHING!**

*Manufacturing engineers of automatic processing equipment in glass, packaging, plastic and other industries.*

**ATLANTA • CHICAGO • SAN FRANCISCO**  
**ENGLEWOOD, NEW JERSEY • DEFIANCE, OHIO**

Circle 97 on Reader Service Card

**LYNCH**  
CORPORATION  
Anderson, Indiana



## Tiger Brand — America's No. 1 Wire Rope



### Westinghouse Can Be Sure because those are Tiger Slings

The generator stator plus lifting beam weighs 297 tons. It was built by Westinghouse Electric Corporation and delivered to the Thos. H. Allen Electric Generating Station in Memphis, Tennessee.

They couldn't take chances when they unloaded this mammoth power package from the railroad car, so they lifted it with Tiger Braided 8-Part Slings. Each of the eight parts is a 1" diameter Monitor Improved Plow Steel Wire Rope, and each is Tiger Brand—America's No. 1 Wire Rope. Four of the ropes are Right Regular Lay, and four are Left Regular Lay. They are braided in pairs so that Right Lay and Left Lay pairs are opposite each other. This reduces the tendency of the sling to kink or rotate under load.

American Steel & Wire makes a complete line of slings and fittings for all industrial applications. And if you need a special sling for a particular job, just give us the details.

For more information write to American Steel & Wire, Dept. 0150, 614 Superior Ave., N.W., Cleveland 13, Ohio.

*USS and Tiger Brand are registered trademarks*

#### Why Tiger Brand is your best buy

1. It is made by a company that maintains the most complete wire rope research and manufacturing facilities in the country.
2. It is designed by one of the country's most capable staffs of wire rope engineers. It is serviced by thoroughly experienced field representatives always ready with their assistance.
3. Every type of Tiger Brand Wire Rope is designed for specific applications. You get the *right* rope for the job.
4. It is made by one company, U. S. Steel, and every step of production from ore to finished product is carefully controlled and supervised to guarantee one high standard of quality.
5. Tiger Brand Wire Rope is manufactured by the largest single producer in the country.

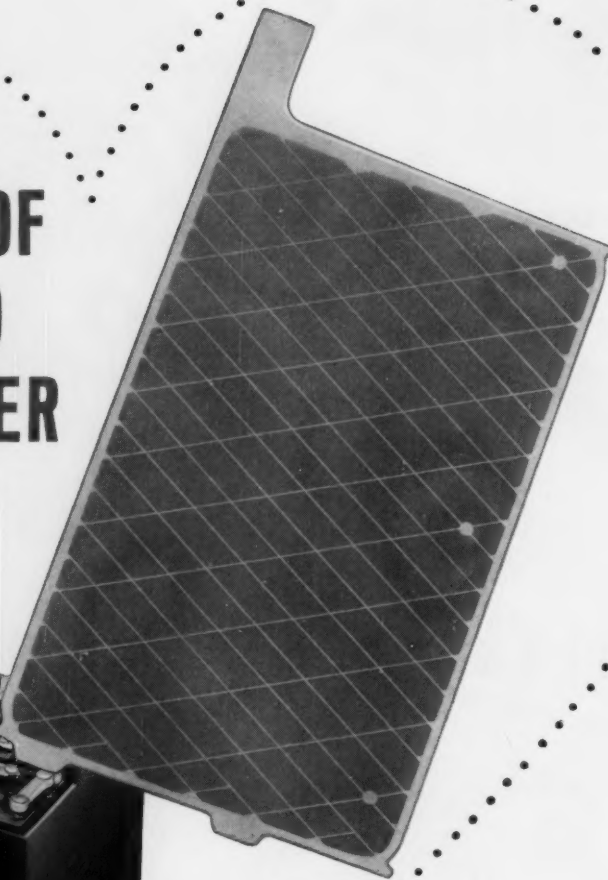


**American Steel & Wire  
Division of  
United States Steel**

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors  
Tennessee Coal & Iron Division, Fairfield, Alabama, Southern Distributors  
United States Steel Export Company, Distributors Abroad

Circle 17 on Reader Service Card

AT THE  
HEART OF  
ALL GOULD  
MOTIVE POWER  
BATTERIES



## the vital new *SILCONIC* plate

*Increases battery life 25% by preventing grid corrosion, the most common cause of battery failure.*

Here's the principle: Gould introduces silver and cobalt into active materials of the positive plates. The silver and cobalt migrate to—and collect on—positive grid members, forming an insoluble oxide surface impervious to acid and oxygen attack. The longer the battery operates, the deeper the silver-cobalt penetrates into the grid metal, thus greatly prolonging life. In applications where batteries are idle for periods of time, Gould's Silconic Plate prevents migration of materials to the negative plate, effectively reducing self-discharge within the cell.

Further overall strength is achieved when arsenic is added to the antimonial alloy of the plate, resulting in an extremely dense, homogeneous grid free of flaws. This new physical and chemical strength—together with Gould's compact battery design—add up to the best motive power battery you can buy. Write today or call your local Gould representative. He's listed under "Batteries—Industrial" in the Yellow Pages. Gould-National Batteries, Inc., Trenton 7, N. J.

*More Power to you from* **GOULD**

Circle 76 on Reader Service Card

MATERIAL HANDLING ENGINEERING



**Don't gamble with "look-alikes!"  
get the best first, get DISOWHEEL®**

In the material handling industry, a long-sought need for a wheel that combines long wear and soft ride has been attained with Disogrin®-treaded Disowheels. In plant after plant, Disowheel's performance over all other types of wheels proved that it solves practically every wheel problem.

But, the "look-alike" characteristics of this wheel with similar types caused many buyers, believing that "it's all the same stuff," to use wheels other than Disowheel. Performance after use, however, bore out the difference between Disowheel and these

other types, in that, the latter wore out more rapidly than the Disowheels that were employed.

Now, to assure that you will be getting top performance and dependability long before you actually use the wheel, every Disowheel incorporates the Disogrin trade-mark. So, don't be fooled by "look-alikes!" Insist on only Disowheels, identified by the Disogrin trade-mark. It is your assurance of peak performance and dependability backed by the company whose only business is the manufacture of high quality material handling wheels. For complete information, ask your dealer or write direct.

**DISOGRIN INDUSTRIES**

510 SOUTH FULTON AVENUE, MOUNT VERNON, NEW YORK • Offices and Distributors in Principal Cities  
Circle 54 on Reader Service Card

## SAVINGS without end...



Baldwin-Hill Company, insulation manufacturer, achieves new waste-disposal efficiency with Load Luger System—eliminates unproductive plant clean-up periods, improves production rate and quality.



Bowaters Southern Paper Corporation maintains maximum plant cleanliness, safety, and operating efficiency by disposing of waste and handling bulk materials with Load Luger System. Only one man per shift, the Load Luger driver, is needed.



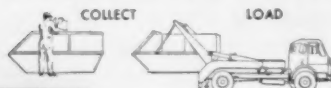
## LOAD LUGGER SYSTEM of handling materials in bulk lowers costs

Satisfied with the efficiency of your present bulk materials handling procedures? Satisfied with costs? If not, look to Load Luger. You'll be agreeably surprised by the endless ways in which the versatile Load Luger System can effect savings for you. You'll save on manhours, you'll save on equipment and its maintenance — one Load Luger equipped truck and containers can do the work of a fleet of ordinary vehicles. Also, you'll gain greater overall plant efficiency.

Upjohn Company, pharmaceuticals producer, solves acute materials handling and waste disposal problems with Load Luger System. In above operation fluid is discharged from tank-type Load Luger container through a hose.

Telephone collect, Flreside 2-0136 to learn how Load Luger can cut your costs.

Container capacities 1 1/2 to 16 cubic yards Containers available for solids, liquids, gases.



**Borg-Warner Corporation**  
INGERSOLL KALAMAZOO DIVISION  
724 East Vine Street, Kalamazoo, Michigan, Telephone Flreside 2-0136  
EXPORT SALES: BORG-WARNER INTERNATIONAL CORPORATION, CHICAGO  
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## CALENDAR of EVENTS

**April 4-7**  
29th National Packaging Exposition  
Sponsored by American  
Management Assoc.  
Convention Hall  
Atlantic City

**April 12**  
5th Annual Industrial Material  
Handling and Packaging  
Conference  
University of California  
Berkeley

**April 12-13**  
AIEE Material Handling Conference  
Hotel Sheraton  
Philadelphia

**April 18-19**  
Third Annual Conference on  
Automatic Techniques  
Cleveland-Sheraton Hotel  
Cleveland

**April 20-27**  
International Packaging Exhibition  
Dusseldorf, Germany

**May 3-13**  
1960 Mechanical Handling  
Exhibition  
Earl's Court  
London, England

**May 9-13**  
1960 Castings Congress and  
Exposition  
Philadelphia

**May 11-13**  
3rd Western Regional Material  
Handling Show and Packaging  
Cavalcade  
Great Western Exhibit Center  
Los Angeles

**May 26-28**  
1960 MHEDA National  
Convention  
Congress Hotel  
Chicago

**June 6-8**  
Material Handling Institute New  
England Show  
Commonwealth Armory  
Boston

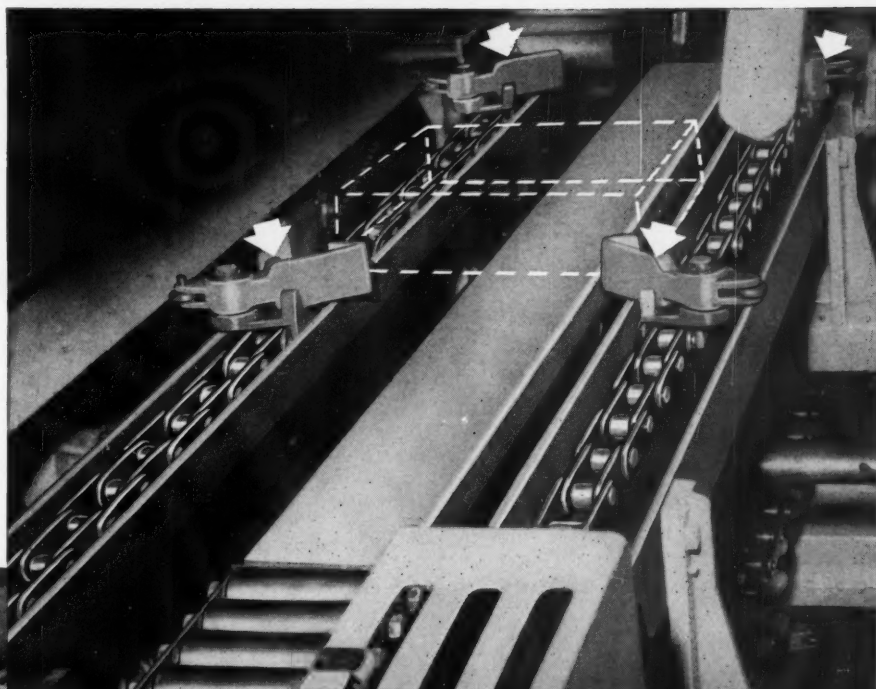
**June 12-25**  
7th Annual Material Handling  
Course  
3rd Annual Packaging Course  
The Industrial Management Center  
Lake Placid, New York

**July 19-21**  
1960 Western Packaging &  
Material Handling Exposition  
Pan Pacific Auditorium  
Los Angeles



Parallel strands of DIAMOND Roller Chain are equipped with standard attachments adapted for pushing Cēpacol cartons through primary sealing process.

DIAMOND multiple strand, power transmission roller chain operates over 32 and 76-tooth DIAMOND Sprockets on one of Merrell's Z-bar blenders. The 32-tooth sprocket turns at 125 rpm.



## Cost-cutting Cēpacol production lines depend on **DIAMOND** roller chains

● Automated packaging operations help The Wm. S. Merrell Company reduce the manufacturing cost of its well known Cēpacol oral anti-bacterial products. For power transmission and for synchronized conveyor movements Merrell used DIAMOND Roller Chain. For Cēpacol, as for many other industries and products, DIAMOND durability, accuracy and dimensional stability—its long, maintenance-free service life—contribute substantially to the efficiency and *lower unit cost* of production.

Let DIAMOND Roller Chain prove its capabilities to *you*—in modern packaging operations or wherever *the efficient transfer of power or motion* is a problem. Write for DIAMOND's new descriptive catalogs and engineering data.

For name of your nearest Distributor, look under "Chains" or "Chains, Roller" in your Telephone Directory Yellow Pages.

### DIAMOND CHAIN COMPANY, Inc.

A Subsidiary of American Steel Foundries  
Dept. 624, 402 Kentucky Ave., Indianapolis 7, Indiana  
Offices and Distributors in All Principal Cities

# DIAMOND



# ROLLER CHAINS®

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# Yale low-cost electrics

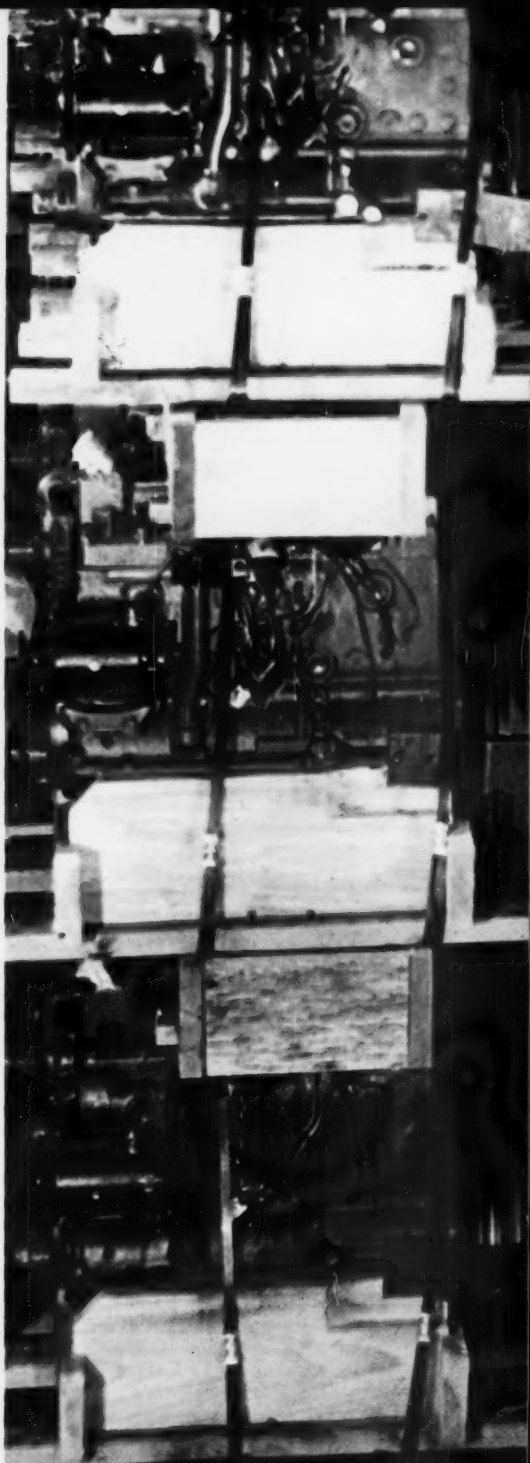
in the 2000-3000-lb. capacity range are saving time and money for industry every day. Delicate maneuvering and deft handling are especially easy with this truck, for the mechanically actuated carbon pile speed control permits close-in inching and infinite speed variation. Twin-caster steer wheels make steering effortless, and easy right-angle turns in narrow aisles sharply increase storage space, cut stacking time. This electric truck saves maintenance overhead and "down-time" because of a minimum of moving parts and an economical powerplant. This is one of Yale's complete line of industrial lift trucks ... the right truck for every job! For full information, call your Yale representative or send for free brochure #5265 to The Yale & Towne Manufacturing Co., Materials Handling Div., Philadelphia 15, Pa., Dept. KT7.

Yale Materials Handling Division, a Division of The Yale & Towne Manufacturing Company. Manufacturing Plants: Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark. Products: Gasoline, Electric, Diesel and LP-Gas Industrial Lift Trucks Worksavers • Warehousers • Hand Trucks • Industrial Tractor Shovels Hand, Air and Electric Hoists.

## YALE®

INDUSTRIAL LIFT TRUCKS  
TRACTOR SHOVELS • HOISTS

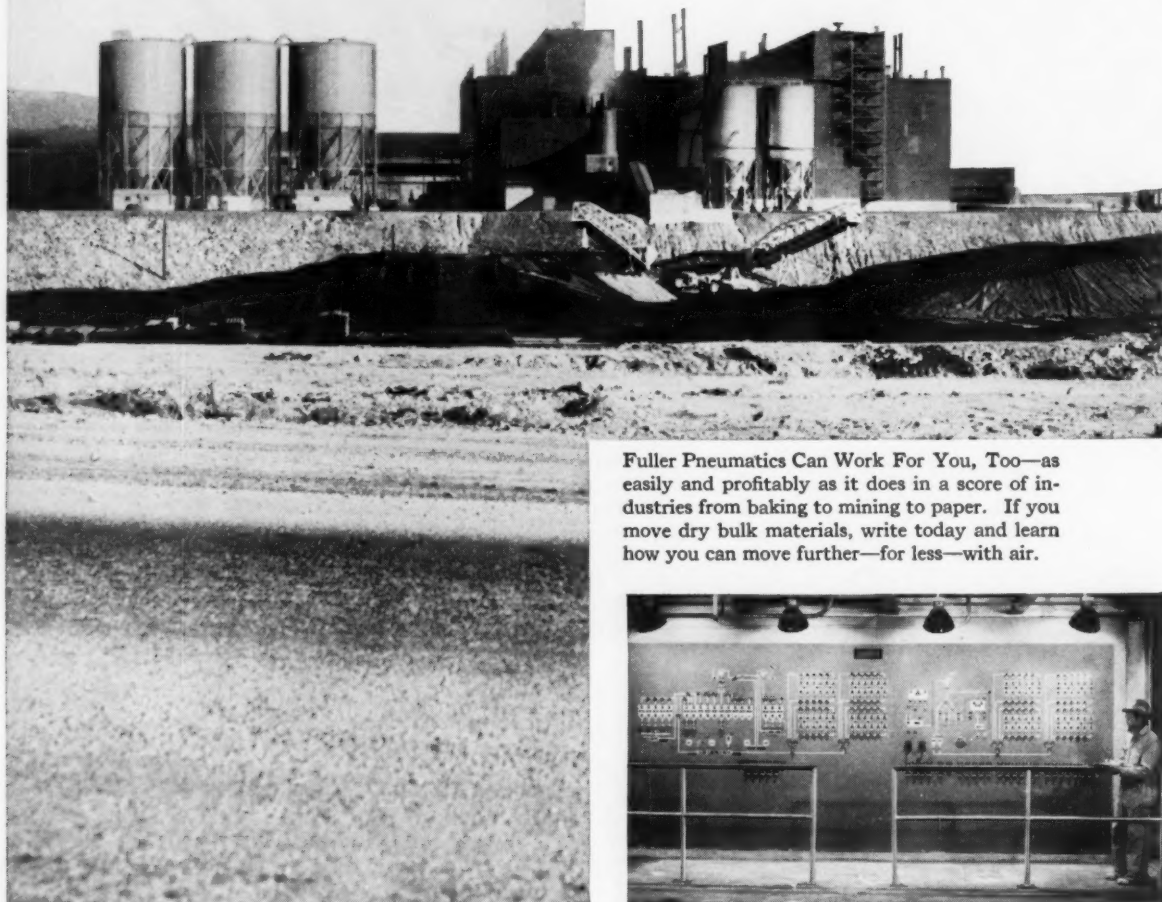
YALE & TOWNE







## How Pneumatic Conveying Helps Make New Mining Process Economically Practical



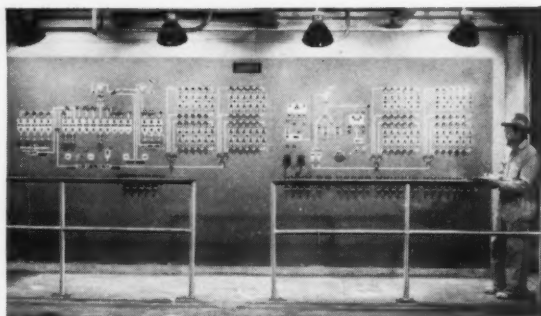
Four Fuller Pneumatic Systems can speed more than 307 long tons of additives through this huge Taconite Pelletizing Plant in a single day.

Taconite processing is typical of the many varied, cost-saving applications for Fuller Pneumatic Conveying.

They're turning low assay iron ore into rich pellets on the Mesabi these days. Moving additives for pelletizing, Fuller plays a special role in this feat of engineering and production economy.

Fuller Pneumatic Conveying Systems are carrying fine anthracite screenings, soda ash, and bentonite from siding to storage to processing—with speed, safety, sanitation, and efficiency. With few moving parts to wear out and powered by inexpensive low-pressure air, Fuller Pneumatic Conveying Systems speed dry bulk materials *anywhere that a pipeline can be run*: under ground, up through floors, around corners . . . for far greater distances and at substantially lower cost than possible with mechanical conveyors.

Fuller Pneumatics Can Work For You, Too—as easily and profitably as it does in a score of industries from baking to mining to paper. If you move dry bulk materials, write today and learn how you can move further—for less—with air.



Centralized control is provided by giant panel designed and manufactured by Fuller.



**FULLER COMPANY**  
164 Bridge St., Catasauqua, Pa.  
Subsidiary of General American Transportation Corporation  
Offices in Principal Cities Throughout the World

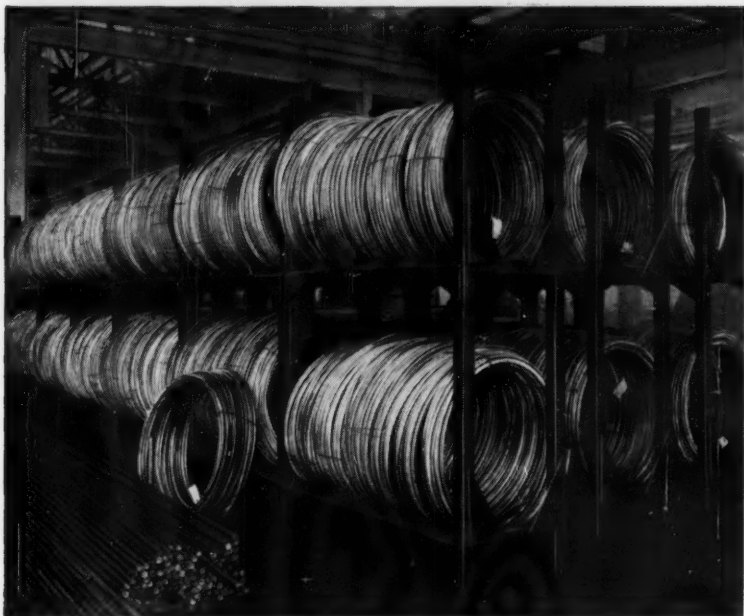
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2097  
G229

# EMI

*your prime source  
for high quality racks*

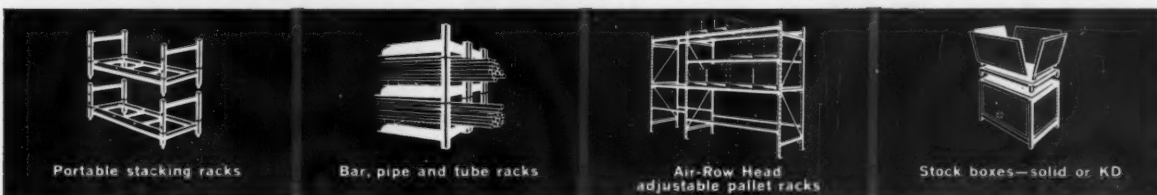


## STACKING STORING SHIPPING

EMI has the most complete range of storage and material handling racks in the industry. Shown here are examples. If you have a special problem, we will design racks to your exact specifications.

**Coil and reel racks.**

Can be moved from storage to fabrication area.

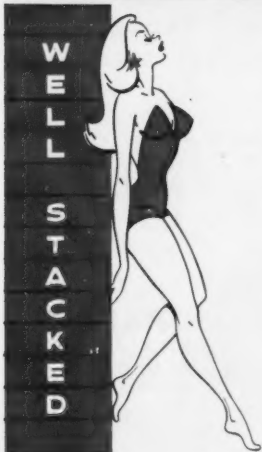


Portable stacking racks

Bar, pipe and tube racks

Air-Row Head  
adjustable pallet racks

Stack boxes—solid or KD



### METAL WORKING FACILITIES

EMI offers complete metal working facilities including tubular, structural and special shapes.



Round



Square



Rectangular



Step



Zee



Channel

**YOU CAN STACK OR SHIP  
ANYTHING ON EMI RACKS**

*Write for our complete catalog!*

## EQUIPMENT MFG. INC.

21552 HOOVER ROAD

• DETROIT 5, MICHIGAN

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# JUDGE THESE CASES of Monarch Solids

VS.

## Premature Rim Separation

### Here are the facts:

The following are typical field reports on test installations in which conventional solid tires had been failing prematurely.

#### Case #3

##### ALUMINUM REMELTING PLANT

**PROBLEM:** In normal operation, standard solids were failing in two months because of rim separation.

**CONDITION:** Floor littered with sharp aluminum scrap, chips and shavings.

**TEST RESULTS:** New Monarchs with Monolok bond ran six months . . . 200% longer . . . and were replaced after normal rough wear. Bonds did not fail in spite of heavy scrap embedded in tread and piercing base band.

#### Case #8

##### TANNERY

**PROBLEM:** Original equipment solids failed in two months: rim separation.

**CONDITION:** Floors covered with salt brine and sulphuric acid.

**TEST RESULTS:** Monolok bonded tires have been in operation seven months . . . a 250% improvement to date . . . and still are running satisfactorily.

#### Case #21

##### COAL MINE (Bore Operation)

**PROBLEM:** Standard solids failed in six months because of chipping at outside base and subsequent separation.

**CONDITION:** Rough surfaces + overloads.

**TEST RESULTS:** Twelve Monarchs with the Monolok bond already have lasted eleven months . . . 83% longer . . . and still are in satisfactory condition.

\* "Monolok" is Monarch's trade-name for a new chemical process that creates the most durable rubber-to-metal bond available to date.



The most universal type of failure experienced with industrial solid tires . . . premature rim separation . . . frequently is caused by embedded metal scrap, chemicals or excessive heat. And because these factors destroy the rubber-to-metal bond, they cause severe tire damage (and high replacement costs) under normal operating conditions.

MONARCH engineers have succeeded in solving this serious problem by combining an advanced bonding process with an improved, extra tough, natural rubber stock . . . Compound T-5100. **Result:** MONARCH tires now feature unprecedented resistance to rim separation caused by the above factors.

**Verdict: NEW "MONOLOK"\* PROCESS CAN CUT YOUR TIRE REPLACEMENT COSTS!**

See your Monarch dealer or write direct for BULLETIN MR-457.



• 7-225 General Motors Bldg., Detroit, Mich.  
• 2353 No. California Ave., Chicago, Ill.  
• Western Warehouse: Reno, Nevada

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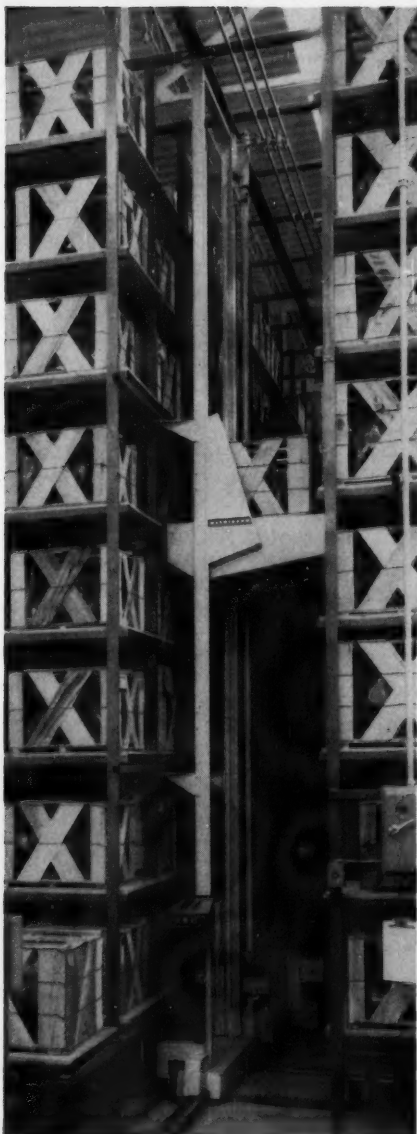
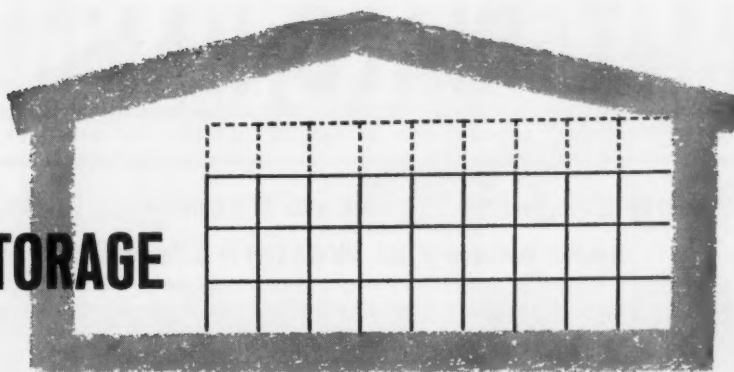
MATERIAL HANDLING ENGINEERING



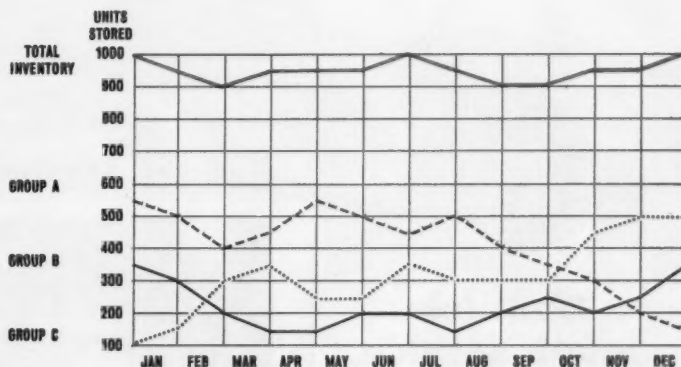
# MAXIMUM CAPACITY THRU RANDOM STORAGE

and

## TRIAX RETRIEVER



**Don't waste valuable space.** The new Triax Retriever System now makes possible the complete utilization of all storage space . . . at all times . . . with full inventory selectivity. Because the Retriever can automatically place any unit load in any open compartment . . . or can remove any unit at the touch of a button . . . there is no waste storage space. No block of space must be reserved to accommodate the maximum inventory of a given item and no special provisions have to be made for temporary accommodation of an over-supply of any given item. Whenever any compartment in the entire installation has been emptied, it is immediately available for incoming material regardless of classification. The Retriever gives true random storage . . . complete accessibility to any unit . . . complete utilization of all warehouse space.



The simplified graph above indicates how, with a Triax Retriever System, random storage makes maximum utilization of warehouse space at all times. Regardless of the peaks or lows of inventory of any part or storage unit, all compartments may be used throughout the year.



**THE TRIAX COMPANY**  
SWestbriar 1-9800

11955 SHAKER BLVD.

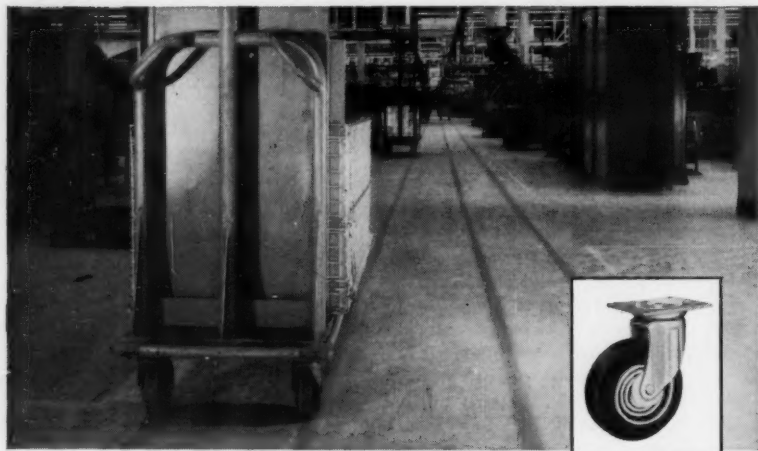
• CLEVELAND 20, OHIO

Circle 149 on Reader Service Card

# MATERIALS-HANDLING NEWS

NEW AND UNUSUAL APPLICATIONS OF BASSICK CASTERS THAT MIGHT BE ADAPTED TO YOUR HANDLING PROBLEMS

## How drag-line trucks on Bassick Casters save money at Western Electric



At Western Electric's Andover plant in Massachusetts, trucks on a continuous drag-line route deliver materials and re-

move finished parts at a steady 1½ mph. Carts can be automatically switched from main conveyor route to stop at any department—as needed. Simplicity of operation and easy movement through manufacturing process adds up to materials handling economy.



### Built for rough service

Brings quiet, easy swiveling action to some of industry's roughest caster applications. Popular for both general factory use and in warehouses, stores and institutions. Case-hardened bearing surfaces and specially formed structural steel shapes combine to deliver the economical values of long wear and extra strength. Projection welded oversize ball raceways add to service life. Wide range of wheel sizes and types make Series H-99 useful for many needs.

### A GOOD MAN TO KNOW!

Local industrial distributors who handle Bassick casters can advise you on specific casters that will best solve your materials handling problems. They stock popular models.

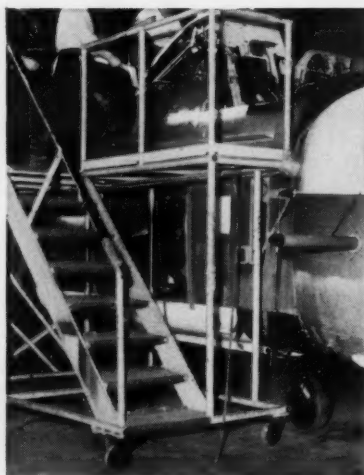


Automatic Conveyor at Bowaters Southern Paper Company, Calhoun, Tenn.

## This vertical paper conveyor moves on 8 Bassick Casters

The Lamson Corporation, designers of this automatic conveyor system, points out that there can be no unimportant parts because failure of any one would shut down the entire mill. Eight Bassick Swivel Casters, Series "77," provide vital movement for the conveyor that loads and unloads itself, revolves, tilts and shuts itself off. It moves rolls of newsprint that weigh up to 2,500 pounds, and is part of in-plant distribution system between production floors, storage and truck, rail and barge transportation. This is typical of the way Bassick Casters help resolve key materials handling problems by helping to move finished products as well as parts, equipment and raw materials.

## Bassick Casters help hatch Whirlybirds



Men at work on rotor head of another Sikorsky helicopter at Stratford, Connecticut. Notice how Bassick levelizing jacks hold the maintenance stand still and rigid while work proceeds. Later, it will roll easily away on its 8-inch, Series 77 Bassick casters.

O.32



THE  
BASSICK COMPANY  
BRIDGEPORT 5, CONN.  
IN CANADA:  
BELLEVILLE, ONT.



**Bassick**  
A DIVISION OF



Circle 19 on Reader Service Card

MATERIAL HANDLING ENGINEERING

# ***AUTOMATIC SLASHES GAS LIFT TRUCK OPERATING COSTS 3 WAYS***



## **1 CUTS OUT-OF-POCKET COSTS**

Savings up to 30% on fuel costs achieved through use of a simplified electric power train. New 3-way adjustable seat increases driver efficiency...reduces fatigue. Simplified balanced design saves on downtime.

## **2 CUTS MAINTENANCE COSTS**

Hydraulic pump life increased by 50%. Oversize brakes last up to 30% longer and are adjustable without removing wheels. Advanced-design roller mounting increases life of uprights. No clutch or hydraulic torque converter to cause trouble.

## **3 INITIAL COST REDUCED**

No longer a premium-priced truck, but priced competitively with trucks which use hydraulic torque converters.

**LEARN MORE** about how Automatic's gas-operated, electric-driven trucks can slash your operating costs. Available in capacities 3,000 to 10,000 lbs. with cushion tires, 3,000 to 8,000 lbs. with pneumatic tires. Write today.



**AUTOMATIC TRANSPORTATION COMPANY**  
Division of The Yale & Towne Manufacturing Company  
141 West 87th Street, Dept. D-O, Chicago 20, Ill.

**FIRST IN IMAGINATION  
FIRST WITH REALITY**

**LEARN MORE ABOUT  
AUTOMATIC'S COST-CUTTING  
LIFT TRUCKS**

Please send me complete details about  
Automatic Gas-Operated, Electric-Driven  
Lift Trucks, in capacities  
of \_\_\_\_\_ lbs. \_\_\_\_\_ lbs. \_\_\_\_\_ lbs.

NAME \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY & ZONE \_\_\_\_\_ STATE \_\_\_\_\_





## HANDLING 'ROUND THE COUNTRY

### THREE GROUPS PLAN MH CONFERENCES

Electrification of material handling equipment is the subject of an AIEE technical conference in Philadelphia. Planned for April 12 and 13, the conference divides into three half-day sessions with nine topics and 12 speakers. Among topics will be static switching systems and components, industrial fork lift trucks, automated material control, conveyor applications, missile handling, ore unloaders, and motor selection for AC cranes.

**AMA Manufacturing Division.** The group is conducting a two-unit seminar on Reducing the Costs of Order Picking, Packing, and Warehousing. The 2nd session is April 6-8 in New York City's Hotel Astor. The first was last month. Purpose of this orientation seminar is to present the best in management practice.

**The Industrial Management Center.** This organization will hold its seventh annual Material Handling and Packaging Training Course June 12-25.

### 3 NEW MH FIRMS

In Wilmington, Del., Packaging Services Inc. offers contract packaging, all types of flexible film packaging for the chemical, pharmaceutical, food, cosmetics, and hardware industries. The firm is headed by A. J. Gordon and A. S. Jacobs.

In Minneapolis, Flo-Tronics Inc. supplies automated bulk handling systems for the food, chemical, and process industries. President is William P. Edmunds.

In Brooklyn, N.Y., Lawrence Piller Inc. engages in material handling and moving van equipment. President is Lawrence Piller.



**KEY PIECE** of equipment at The Markey Bronze Bushing Co. is this Model H-25 Payloader tractor shovel. Markey uses the Hough unit between 50 and 60 hours a week, handling eight stations with hauls up to 125 ft. Capacity is 2,500 lb. During an 8-hr. day, the tractor shovel moves 18 tons of sand, feeding hoppers and delivering it to the conveyors. Also, the Payloader handles four tons of castings, carries machinery, and does general maintenance work. Plant Foreman John Stromberger says the Payloader handles easily, is maneuverable, and works in and out of tight places very well. Markey produces cast bronze bushings and bearings.

### HANDLING SHOWS REPORT INTEREST IN BOOTHS

Display booths for the Material Handling Institute New England Show have been reserved by 75 companies. The show will be June 6 through 8 in Boston's Commonwealth Armory. MHI Managing Director L. West Shea says the exhibitor list shows a wide diversification. As a service, MATERIAL HANDLING ENGINEERING staff will put out a Daily Show News.

**Third Western Regional Material Handling and Industrial Packaging Show.** Management reports orders for booth space are coming in 25 percent faster than previous shows. Chairman A. E. Flinck says more than 600 manufacturers will be represented. The show will be May 11 through 13 in Los Angeles.

**British Mechanical Handling Exhibition.** This is scheduled for May 3 to 13 in Earls Court, London. Buyers from more than 80 companies are expected to view exhibits covering some 500,000 sq ft of space.

### NO-LICENSE RADIO

You don't have to wait for a license to use a new two-way radio from KAAR Engineering Corp. The unit, TR 326 D phone, uses only 100 milliwatts and a 5-ft antenna. Under the FCC's limited radiation regulation, you can use this unit without consultation, checking, or filing with the FCC. After you get your license, the unit can be modified for use as Class D equipment.

### IN THE NEWS . . .

Zenith Carburetor Division, Bendix Aviation Corp., now has a permanent LP carburetor school at its factory. A four-day course includes basic engine data, ignition, tune-up, and complete carburetion instruction. The course is open to anyone in the LP industry. Registration fee is \$15. First class, limited to 15, is April 4.

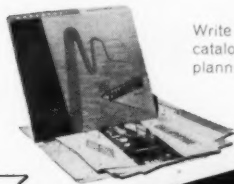
*(Continued on page 28)*

## Power & Free Chainveyor System Eliminates Unnecessary Manual Handling



This overhead power and free conveyor system transports loaded carriers through multiple automatic switch stations. The carriers move into any one of a number of free (non-powered) lines for in-process storage according to grade and color of the load. Power is provided by a standard Chainveyor system on which pusher dogs are mounted directly to the enclosed chain. These dogs engage arms on the free track carriers. Switches automatically divert loads from power lines to gravity storage lines and back to power lines as desired.

Chainveyor's superior power and free design replaces bulk with ingenuity and versatility to solve critical production problems economically and efficiently. Investigate Chainveyor's advantages for modernization or new plant applications now!



Write for Chainveyor's Planning Folder which includes illustrated catalogs, explanatory diagrams, plant and conveyor planning grids for preliminary layouts.

QUALITY  
OVERHEAD  
CONVEYOR  
SYSTEMS

# CHAINVEYOR<sup>®</sup>

**CORPORATION** *Engineers & Manufacturers*

Distributors in all principal cities.

District offices: Chicago, Detroit, Jacksonville, Newark, New Orleans.

Main Offices: 5618 East Washington Blvd., Los Angeles, California

Circle 43 on Reader Service Card

## SUPERIOR OPERATION AT LOWER COSTS



### MULTITON FULLY HYDRAULIC PALLET TRUCKS 2200-3500-4400 POUND CAPACITIES

#### SUPERIOR

**LIFT SYSTEM** ■ Leakproof, one-unit hydraulic system — machined oil passages ■ magnetic oil filter ■ overload, overflow valves ■ all valves accessible from outside ■ hard chrome-plated pistons ■ honed cylinders.

#### SUPERIOR

**CONTROL** ■ Hand-operated maximum 7¾" lift in three strokes ■ lowering speed remains constant ■ pallet entry and exit rollers.

#### SUPERIOR

**CONSTRUCTION** ■ Torsion-proof hardened joints ■ box-section type push rods ■ knee-action axle mount ■ taper roller bearings on load rollers ■ low, tapered forks for maximum clearance.

#### SUPERIOR

**EXTRAS** ■ Exclusive shoe-type brake ■ variety of wheels to fit every requirement ■ all standard fork-lengths ■ skid adapters.

OTHER PRECISION-BUILT MULTITON EQUIPMENT IN A WIDE RANGE OF CAPACITIES, INCLUDES . . . ELECTRIC PALLET TRUCKS ■ HYDRAULIC AND MECHANICAL SKID TRUCKS ■ HYDRAULIC LIFT TRUCKS ■ POWERED PLATFORM TRUCKS ■ SPECIAL PURPOSE TRUCKS & OTHER EQUIPMENT



### ... AND FAMOUS MULTITON ROLLER SKIDS TWO MEN CAN MOVE HEAVY MACHINES AND EQUIPMENT

up to 300 tons, with Multiton Roller Skids and suitable tractive power. They lay own track and swivel easily in close quarters. Junior Kit available for loads to 6000 lbs.

For full information or free demonstration of Multiton equipment, write:

### STOKVIS MULTITON CORP.

18 SECATOAG AVE., DEPT. E • PORT WASHINGTON, NEW YORK

In Canada: Griswold Engineering Ltd., Montreal and Toronto

Circle 147 on Reader Service Card

## HANDLING 'ROUND THE COUNTRY

(Continued)

Two new test methods have been adopted by The Pressure Sensitive Tape Council. Covering some electrical properties, they are Dielectric Breakdown (PSTC-14) and Indirect Measurement of Electrolytic Corrosion (PSTC-15). Companies desiring them may write to the Pressure Sensitive Tape Council, 1201 Waukegan Rd., Glenview, Ill. Price is \$1 a set.

Complete engineering services for entire material handling systems may be obtained from Tote System Inc. This includes equipment supplemental to Tote-engineered and Tote-fabricated units, such as supplemental weighing, conveying, and filling equipment. The firm also will arrange for leasing or purchase.

To provide superior service, The Yale & Towne Manufacturing Co. has moved its industrial lift truck and Y-18 tractor shovel sales and service branch to Franklin Park, Ill. There are two separate service shops, one for standard lift trucks, the other for giant handling equipment. There is 24-hour, 7-day-a-week emergency service.

The Chain-O-Flex line has been acquired by the Washington Kinney Co., manufacturers and distributors. The firm produces the regular Chain-O-Flex adjustable turn overhead chain conveyor. In addition, it has improved the medium duty trolley conveyor, making it practical to operate systems up to 1,000 ft long with one drive unit.

## HANDLING FOR THE BLIND

A material handling system helps the blind do a better job. At Goerlich's Inc. of Toledo, O., blind workers turn out packaged muffler parts, 50 million pieces a year using Powell Pressed Steel Co.'s Flow-



Mation system. The system includes a box and open type stand with built-in hopper (see photo). As a lift truck places the box on the stand, a door in the box automatically opens and material flows into a hopper at work level. The box also is used for warehouse storage and in stock control areas. Offset channel legs permit stacking as close as needed. John Goerlich, founder and president of the firm, is president of the Toledo Society for the Blind.



The Yale & Towne Manufacturing Co. has made these distributor appointments for lift trucks and tractor shovels: Kimball Industrial Sales Inc. for northern Indiana and southernmost Michigan; Marshall Supply & Equipment Co. for Oklahoma; and Dees Equipment Co. for eastern, central, and northwest North Carolina. General Supply & Equipment Co. Inc. will handle Trojan tractor shovels for Maryland and part of Delaware.

Wayne Manufacturing Co. has appointed Southern Idaho Equipment Co. dealer for Idaho south of and including Adams, Valley, and Lemhi Counties.

### NEW APPOINTMENTS

The American Pulley Co. has appointed James W. Wayland as southwestern representative with new offices and warehouse in Dallas, Tex.

Chainveyor Corp. has named Mizi Co. Inc. as exclusive distributor for North Carolina and Industrial Supply Corp. for Virginia.

Ingersoll Kalamazoo Div., Borg-Warner Corp., has selected Gene A. Castle as factory sales representative for certain items in the north and middle eastern sections of the country.

Moto-Truc Co. has appointed Green-Penny Corp. as exclusive sales agents in Southern California.

Harnischfeger Corp. has named General Hoist & Equipment Co. of Lynwood, Calif., as authorized distributor and official service station for P & H hoisting equipment in Southwest California.

Oxy-Catalyst Inc. has chosen J. H. McLoughlin as northeast U.S. representative for its line of exhaust purifiers for gasoline, LP gas, and diesel powered industrial vehicles. Also, Freeman Equipment Co. of Miami will handle sales and service in Florida.

Clark Equipment Co. has appointed William E. Kane eastern district representative of construction and bulk material han-

## These **RAYMOND** Trucks Make **NARROW** aisles possible!



### ELECTRIC TIERING TRUCKS

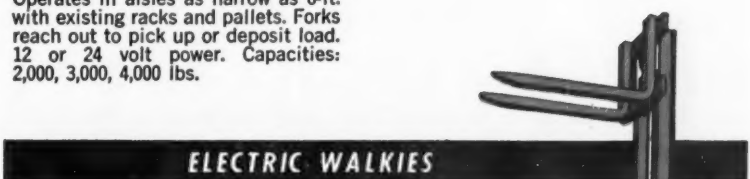
#### STRADDLE TYPE

Right angle tiers pallets from 6-ft. aisle. Telescopic and non-telescopic models. 12 or 24 volt power. Capacities: 2,000, 3,000, 4,000 lbs.



#### REACH-FORK®

Operates in aisles as narrow as 6-ft. with existing racks and pallets. Forks reach out to pick up or deposit load. 12 or 24 volt power. Capacities: 2,000, 3,000, 4,000 lbs.



### ELECTRIC WALKIES

#### LOW LIFT

24 VOLT POWER. Three speeds forward or reverse. Only 20½" longer than load! Low price includes batteries and charger. Capacity: 4,000 lbs.



#### STACKER

Tiers 2,000 lb. pallet load 10 feet high from 6½ foot aisle. 24 volt power. Three speeds forward or reverse. Low price includes batteries and charger.



### SEND FOR FREE BULLETINS!

Whether your operation is small, involving only occasional handling, or big, where tons of goods are moved daily, investigate the dollar and space-saving possibilities of RAYMOND narrow aisle trucks. Send for bulletins today!

#### THE RAYMOND CORPORATION

3305 Madison St., Greene, N.Y.

Please send FREE bulletins:

☐ Reach-Fork ☐ Straddle  
☐ Walkie Low-Lift ☐ Walkie Stacker

NAME	TITLE
COMPANY	
STREET	
CITY	STATE

Circle 128 on Reader Service Card



CUT PARTS-HANDLING COSTS  
AS MUCH AS 60%

WITH **NESTIER**

## BOXES AND BASKETS

Hundreds of manufacturers are stepping up production with these economical steel containers. Nestier Boxes and Baskets eliminate rehandling of parts in the work area. Filled in the stockroom, they tier in rigid stacks on pallets, conveyors or moving belts. Twin handles permit easy lifting or hanging from overhead conveyors. Parts can travel through all production operations including dipping or degreasing in perforated Nestier Baskets. Both Boxes and Baskets can be stacked alongside of workers or hung in hopper racks to provide convenient supplies of parts in a compact area. Empty, they nest neatly out of the way. Uniform construction permits you to take inventory by batch-weighting the contents. Nestier Boxes and Baskets are available in five sizes, 12" to 36" in length. For further information, fill in and mail this coupon today.



### NESTIER CORPORATION

Subsidiary of THE METAL SPECIALTY CO.

Nestier Corporation  
4519 Este Ave., Cincinnati 32, Ohio

B-4

Please send me further information on Nestier Boxes and Baskets.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



Circle 119 on Reader Service Card

### HANDLING 'ROUND THE COUNTRY

(Continued)

dling equipment, covering New York, Philadelphia, and New Jersey. William M. Cramer is New England and upper New York State district representative for the same line. For the Industrial Truck Division, the firm has established a factory sales branch in New Orleans. Manager is George E. Elam.

**Tote System Inc.** has selected System Engineering Co. of Dallas, Texas, as exclusive representative in Texas and New Mexico.

**The Rapids-Standard Co. Inc.** has chosen Foster Equipment Co. of Honolulu as distributor in Hawaii for Rapistan material handling equipment.

**Nutting Truck and Caster Co.** has appointed the Carter-Miller Mill Furnishing Co., Spokane, Wash., as sales representative for the Spokane sales territory.

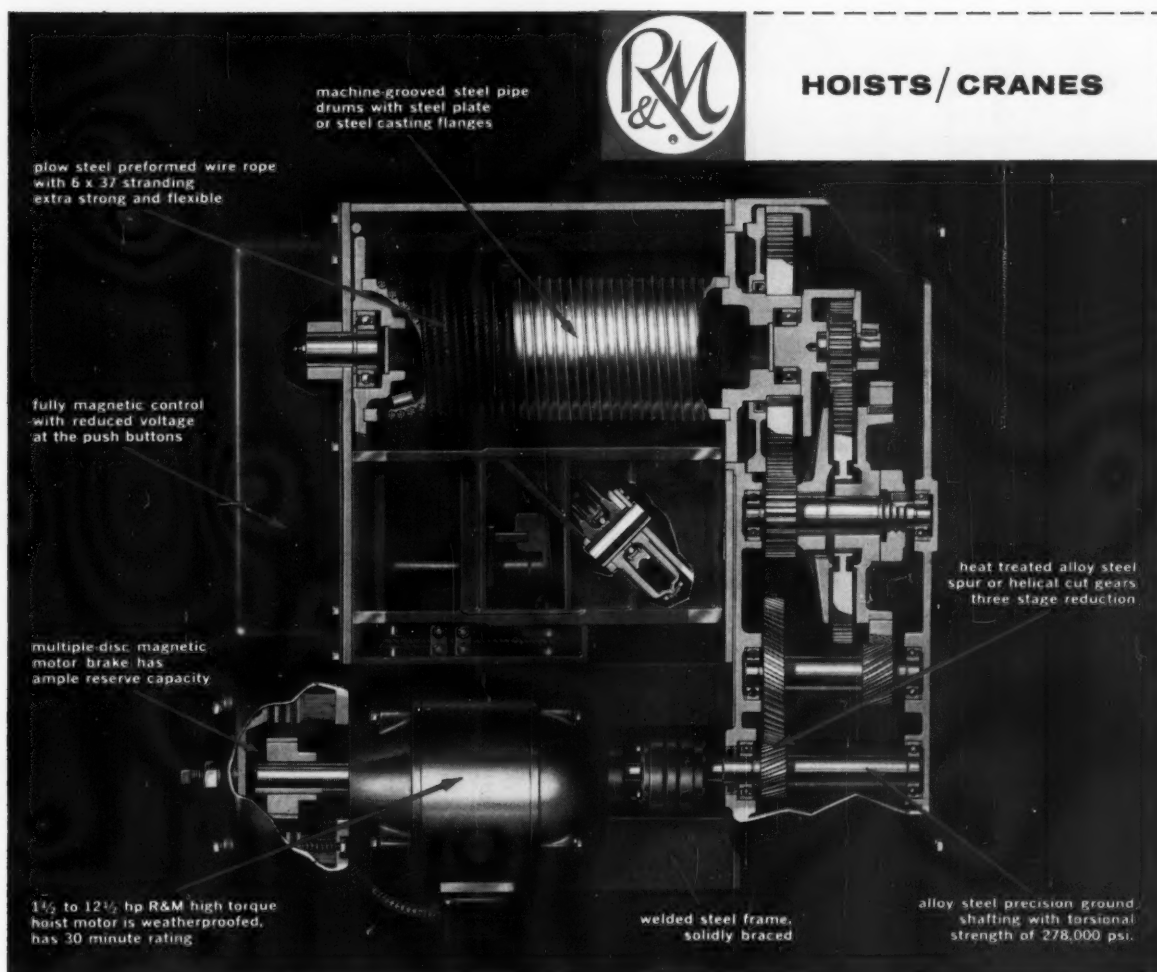
**Automatic Transportation Co.** has named Utica Material Handling Corp. franchised representative for the central counties of New York State.

**Hyster Co.** is represented in South Texas by C. Jim Stewart and Stevenson Inc. which acquired Collier-Hile Co., Hyster dealer in Houston. Hyster has named Handling Inc. of Columbus to serve south central Ohio. The Bode-Finn Co. continues to cover southwest Ohio.

**Fuller Co.** has enlarged its southern division to include most of Texas, Louisiana, and Arkansas. Main headquarters are in Birmingham, Ala., but a new district office is in Houston, managed by Joseph Perry.

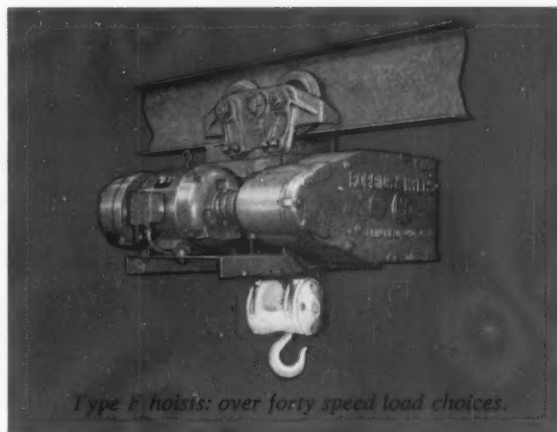
**Century Gas Equipment, Marvel-Schebler Products Division, Borg-Warner Corp.** has chosen Lundgren Motor Repair of Garden City, Kansas, distributor for western Kansas.

(Continued on page 32)



## LOW HEADROOM HOIST FOR HARD USE

Robbins & Myers heavy duty Type F hoists have compact, beam-hugging profiles to save overhead space in your plant. For example, the F-2 has a headroom of only 17", yet provides 2 ton lifts on a path of steel extending from beam to hook. And F hoists are built for toughest use: frame is welded steel, alloy steel gears are heat treated, ball and roller bearings are used throughout. Weatherproof R&M 220/440 v.a.c. motors—to 12½ hp—drive through three gear reductions. These are the hoists to choose for day-after-day production lifting where maximum dependability is important. You can standardize on F hoists throughout your plant because the line is as economical as it is broad: capacities—½ to 10 tons, mounting—lug, plain or geared hand trolley, 3 types of motorized trolleys. Request Bulletin 920. Hoist & Crane Division of Robbins & Myers, Inc., Springfield, Ohio or Brantford, Ontario.

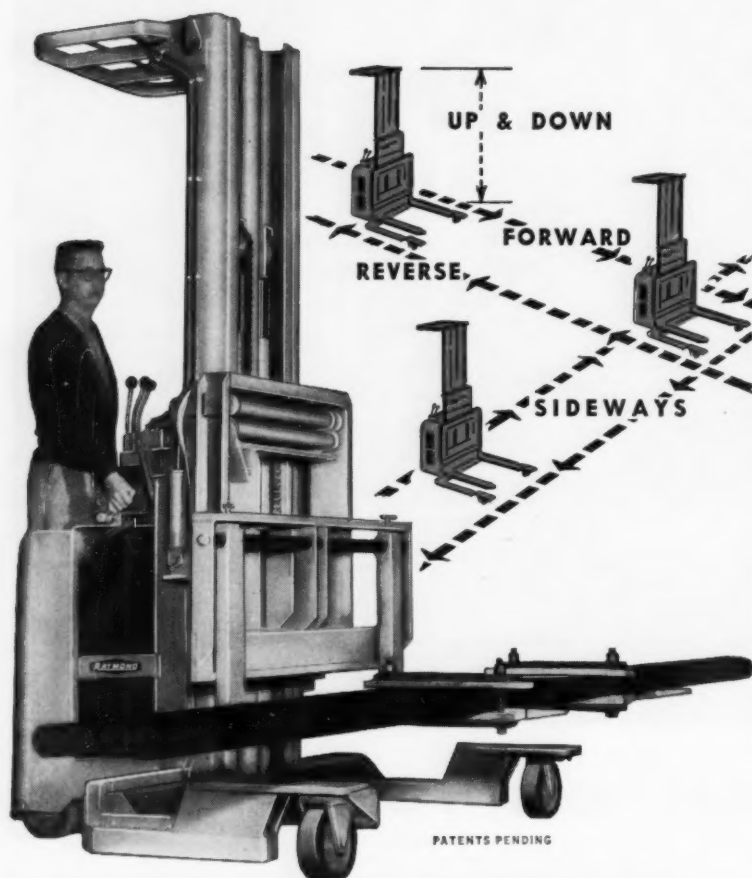


## ROBBINS & MYERS

hoists & cranes, Moyno® pumps, motors, Propellair® fans

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# 4-D ELECTRIC TRUCK



**move LONG material in NARROW aisles**

Bar stock, rods, sheet steel, pipe, tubing, assemblies, carpeting, or any long material is easily handled by the Raymond 4-D Electric Truck . . . up or down . . . forwards . . . backwards . . . or sideways down a narrow aisle. You have to see it to believe it.

**MAIL  
COUPON  
TODAY**

## The RAYMOND CORPORATION

3350 Madison St., Greene, N.Y.

Please send Bulletin describing your amazing 4-D Electric Truck

NAME _____	TITLE _____
COMPANY _____	
STREET _____	
CITY _____	STATE _____

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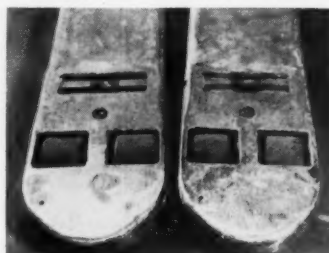
## HANDLING 'ROUND THE COUNTRY

(Continued)

### WHEEL LIFE GOES FROM 3 MONTHS TO OVER 12

SAVINGS of \$3,000 to \$4,000 a year on floor repairs alone. That's the success story of Disowheel in the Rexall Drug Co. plant in St. Louis.

The plant needs fast, efficient handling. It receives and moves about 7,500 crude materials. It ships out 2,500 finished drug items. Rexall depends heavily on material handling trucks, and the trucks need dependable wheels.



**WHEELS** on right were used only three months. Polyurethane-treaded on left are after 12 months use.

For years, however, Rexall put up with heavy downtime because truck wheels failed. Most of the breakdowns occurred around the shipping docks. The area was covered with diamond plate dock boards and sharp-edge plates. The wheels of loaded trucks chunked out when they hit these objects under load. Average wheel life: three months.

After trying other type wheels with no better results, Rexall tested Disowheels, made by Disogrin Industries, Inc. Rexall ran a test truck under the same conditions. After 6 months, they found the wheels still in excellent condition. The company then equipped its entire fleet of pallet trucks with the Disowheels.

They completely repaired their floors. Using Disowheels, there have been no more breaks, cracks, or mars. The maintenance staff is spared from changing wheels, can concentrate on regular duties.



# HOW TO READ A PRICE TAG

*(when you're buying an industrial battery)*

COST CONSCIOUS BUYERS KNOW that the figure on a price tag tells only *half a story*.

The *true cost* is revealed when price is related to what the buyer gets.

THE FIGURE ON THE EDISON price tag is higher. But when you consider *value* in terms of longer life, trouble-free performance, durability and dependability, your EDISON battery *costs less*.

And yet it protects the investment in your electric truck by assuring top performance.



Send for EDISON's informative "Extra Dividends" booklet and get the complete "price-cost" story. Write Storage Battery Division, Thomas A. Edison Industries, West Orange, New Jersey. In Canada: CLM Industries, Division of McGraw-Edison (Canada) Ltd., Toronto 13, Canada.

**EDISON** *The Higher-Priced  
Battery that Costs Less*

**EDISON**

Iron-Alkaline  
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McGraw-Edison Company  
West Orange, New Jersey, U.S.A.

**EDISON** NICKEL-ALKALINE **STORAGE BATTERIES**

Another Product of

McGraw-Edison



## NEWS ABOUT AMHS



DETROIT chapter members gather in the modernistic lobby of Chevrolet Motor Division's Corvair plant.



JOHN H. LAMB, JR., general foreman of material, tells about planned material handling at Willow Run.

### Chevy Shows Corvair Handling

DETROIT—Chevrolet Motor Div. of General Motors Corp. treated members and guests of the Detroit Chapter to dinner at the February meeting. This took place at the new Willow Run Corvair Assembly Plant. Later, the group was conducted on a tour of the assembly area, to view the latest developments in automobile assembly plant layout. Charles N. Trabandt, superintendent of material and production control, welcomed the members to the plant. John H. Lamb, Jr., general foreman of material, described how the plant was planned in relation to good material handling.

### Joint Conference During Western Show

The joint Southern California Chapter AMHS-SPHE technical conference will be held in conjunction with the Third Western Regional Material Handling Show, Packaging and Shipping Cavalcade. The Show will be

held May 11-13 in Los Angeles' Great Western Exhibit Hall. Conferences will take place May 10-11 at the new Chrysler Corp. Training Center in Anaheim. You can get information and reservations by writing to the AMHS conference committee, 2807 Sunset Blvd., Los Angeles 26, Calif. The conference committee (photo, left to right) con-



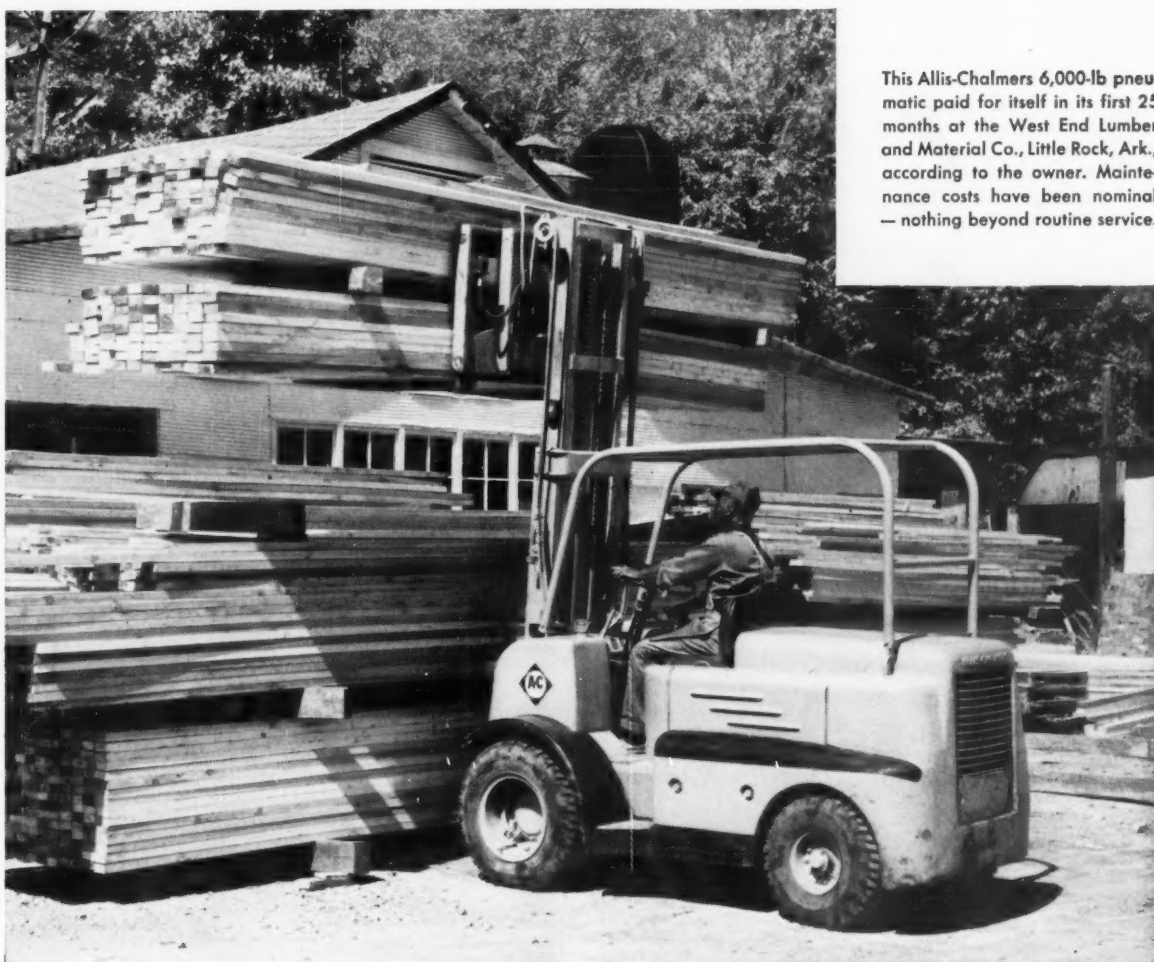
sists of: Henry Cooper, Northrop Corp.; Robert Braun, Jr., R. H. Braun Co.; Ben Hart, Torrington Mfg. Co.; Tom Brown, Exide Battery; Warren Burman, Hyster Co.; Dick Shubert, Gould National Batteries; Chuck Shibel, Southern California Gas Co.

VANCOUVER, B.C.—The February meeting of the British Columbia chapter had W. Duncan as guest

speaker. He is executive assistant of the National Harbors Board. Dawson described the harbor facilities of Vancouver, and told about proposed development of bulk loading docks.

### U.S. Steel Executive To Speak on Efficiency

ELMIRA, N.Y.—D. Max Seeley will address the Southern Tier Chapter's April meeting. He is assistant to vice president—appropriations, engineering division of United States Steel Corp. His subject will be "Shaping Our Earth for Better Living." Seeley will outline helpful methods whereby a supervisor can make material handling operations more efficient. He will show, step by step, how to: (1) question each operation's necessity; (2) combine it with other operations; (3) apply power and gravity to replace manual effort; and (4) rearrange the process to achieve added effectiveness. A U.S. Steel film "The Story of Cerro-Bolivar," will be shown. It describes the operation of an iron ore mine in Venezuela.



This Allis-Chalmers 6,000-lb pneumatic paid for itself in its first 25 months at the West End Lumber and Material Co., Little Rock, Ark., according to the owner. Maintenance costs have been nominal — nothing beyond routine service.

There's a  
**dollar-saving difference**  
 in Allis-Chalmers Lift Trucks

**... and the difference grows by the hour.**

Sometimes it takes 10,000 hours or more to prove: No other lift truck can be expected to operate as steadily, as economically for as long a time as an Allis-Chalmers.

This is a conclusion reached by users in many different industries. They are users who have kept detailed records of operation and maintenance costs . . . that *prove* there is a

dollar-saving difference. Many of their case histories are available for the asking.

Let your Allis-Chalmers dealer show you some of the many years-ahead design features that make the dollar-saving difference. Allis-Chalmers, Milwaukee 1, Wisconsin.

**ALLIS-CHALMERS**



BH-128

APRIL, 1960

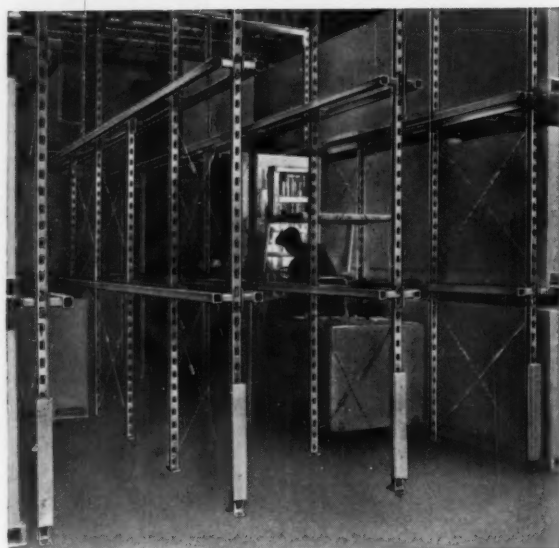
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35

# American OPEN-END

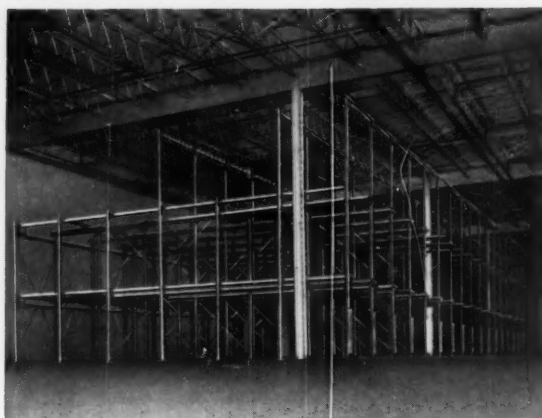
*Drive-In or Drive-Thru*

## ADJUSTABLE RACKS

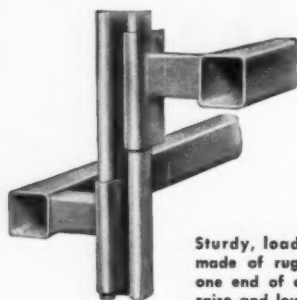


Any fork truck can drive directly into storage area, to load or unload, the American way.

quickly pay for themselves in cutting labor costs and in giving extra storage space



American Open-End Rack installation, Kingsport Press Company, Kingsport, Tennessee.



Sturdy, load-carrying stringers are made of rugged square tubing from one end of a row to the other. They raise and lower like a window, on 4" centers, with the American trigger-quick, slide-n-lock method of assembly.

send for literature

**MOST** for the **LEAST** . . . that's the big story behind American "Drive-In" or "Drive-Thru" storage racks . . . **MOST** in cube storage and storing efficiency . . . **LEAST** in labor costs. These solid facts have been proved time and time again. American "Drive-Thru" racks are open at both ends so trucks can travel all the way through for "first-in," "first-out" storage. American "Drive-In" racks, with one end open, are for use against a wall or where "first-in," "first-out" storage is not necessary. American trigger-quick, slide-n-lock stringers mean quick adjustability for speedy load handling. There's a lot more to tell about these rugged, super-efficient American storage racks, so send for all the facts today.

**AMERICAN METAL PRODUCTS COMPANY**

**STORAGE RACK DIVISION**

5961 Linsdale Ave. **amp**® Detroit 4, Michigan

Manufactured in Canada by Sunshine-Waterloo Co., Ltd., Waterloo, Ontario

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**MATERIAL HANDLING ENGINEERING**

Circle 77 on Reader Service Card →





## *The alternate to this is . . . DOWNTIME!*

*An ounce of prevention . . . can eliminate downtime in your plant. With today's highly mechanized manufacturing and distribution methods . . . downtime of materials handling equipment can mean the difference between a profit or a loss.*

A Clark Dealer Continuous Maintenance Program, available from 113 Clark dealers across the continent, offers you the most effective, and economical method of reducing costly *downtime*. Here's why!

In brief, a Clark Dealer Continuous Maintenance Program offers you:

1) . . . regular maintenance on your industrial trucks on a *programmed* basis. Scheduling is conveniently set up for your particular operation. If you like, service to your equipment can be done at night or at any other time when your equipment is not in use. The additional cost for this off-shift service is a small percentage of the cost of *downtime*.

2) Clark dealers, with the aid of a national service personnel training program, assure you that the best trained mechanics in the industry will service your equipment. These highly trained specialists perform a minimum of 22 separate in-

spections on every truck serviced. They not only perform the normal jobs of greasing and oil changes, but also make all necessary adjustments to your equipment. Most important, they report the condition of your machines, anticipating failure before it happens. As a result . . . *downtime* is drastically reduced.

3) A Clark Dealer Continuous Maintenance Program gets you out of the repair and maintenance business. It eliminates the need for special tools, parts stock and use of valuable plant space for servicing facilities.

4) A Clark Dealer Continuous Maintenance Program is economical. It actually costs less than similar service on your own automobile. This is an inadequate comparison, however, when you consider the small cost of preventive type maintenance to the cost of *downtime*.

For detailed information on a Clark C.M. program call your local Clark dealer (he's listed in the Yellow pages) or write: C.M. Service, Clark Equipment Company, Battle Creek, Michigan. No obligation, of course.

**CLARK®**  
**EQUIPMENT**

GO UP WITH  
CONFIDENCE  
ON

# BALLYMORE

## Safety-Step LADDERS



Now...Ballymore combines welded steel or aluminum safety treads with wide-base pyramid design to offer extra safety and stability. Ballymore ladders let you climb quickly . . . and with confidence—any required height up to 15 feet. Spring-mounted casters that retract when you step on the first step is another safety "plus." They let you roll the ladder easily, yet grip the floor surely to provide safety at all levels.

All welded, corrosion-resistant Ballymore Safety-Step Ladders are available in four types—with 47 models to choose from. Step up to a new standard of safety today.

### WITH HANDRAILS

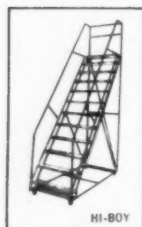


CALL YOUR LOCAL DISTRIBUTOR TODAY

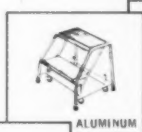
### WITHOUT HANDRAILS



WRITE TODAY—Send for free illustrated catalog of complete line of Safety-Step Ladders for every requirement. Ballymore Company, West Chester 5, Pa.



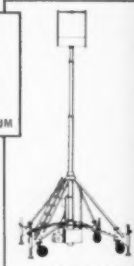
HI-BOY



ALUMINUM



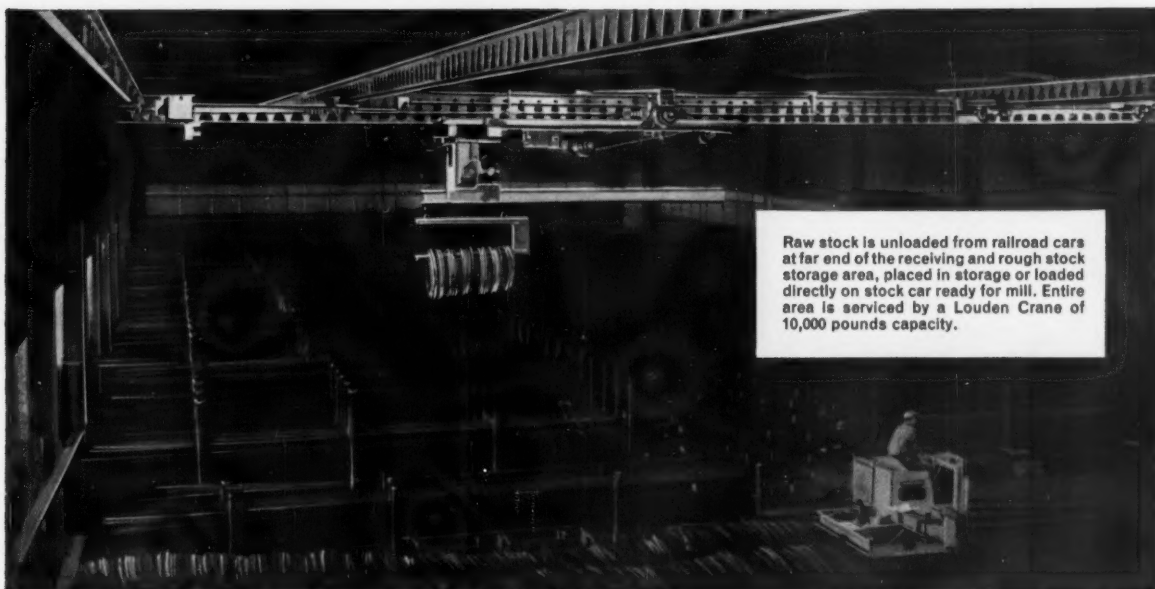
WORK PLATFORMS



ACCESS LIFTS

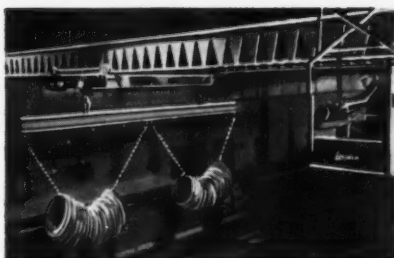
# BALLYMORE

EQUIPMENT FOR WORKING  
*Safely* ABOVE FLOOR LEVEL

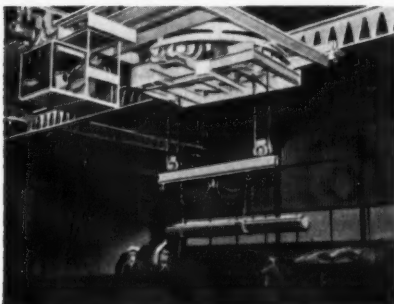


Raw stock is unloaded from railroad cars at far end of the receiving and rough stock storage area, placed in storage or loaded directly on stock car ready for mill. Entire area is serviced by a Louden Crane of 10,000 pounds capacity.

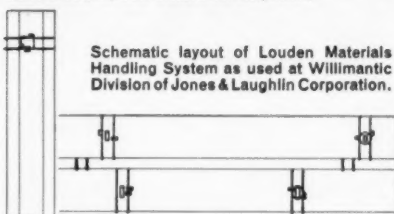
## *CUT COSTS from the start*



Louden Cranes in mill move material through production steps. Here coils have just been removed from acid tanks. Four Louden Cranes handle operations throughout the mill. Two transfer bridges and interlocks provide complete flexibility.



Finished material is placed either in storage or loaded directly into trailers for shipment.



Schematic layout of Louden Materials Handling System as used at Willimantic Division of Jones & Laughlin Corporation.

At the time the Jones & Laughlin Steel Corporation was considering a new plant at Willimantic, Connecticut, a structural engineering firm made a complete study and the results are of unusual interest.

By using an underrunning crane system, it was found that a substantial savings in building and crane costs would be realized, and since this system provided the required effective hook distance at a lower ceiling height, an additional saving in building cost could be obtained. From the start, costs were cut.

All of this points to the one reason why people buy Louden Materials Handling Systems . . . to make more money, via economies, expedited handling, much more productive use of manpower and floor space and through sheer increased production. Louden has the equipment, the engineering and the experience. It has pioneered many developments now standard practice in the industry.

When you have plant requirements involving lifting and transporting loads, call on Louden for suggestions. Louden's unparalleled experience and proven engineering leadership combined with Louden's broad line of equipment can save time and mistakes. Write or wire today.

**NEW** . . . 52 pages of illustrated applications . . . industry by industry. Get the latest and most complete information on planning and equipment selection for the best in modern materials handling. Write today for your copy "COST-CUTTING WITH MONORAIL AND CRANES."



# *Louden* **MONORAIL & CRANE**

**THE LOUDEN MACHINERY COMPANY**

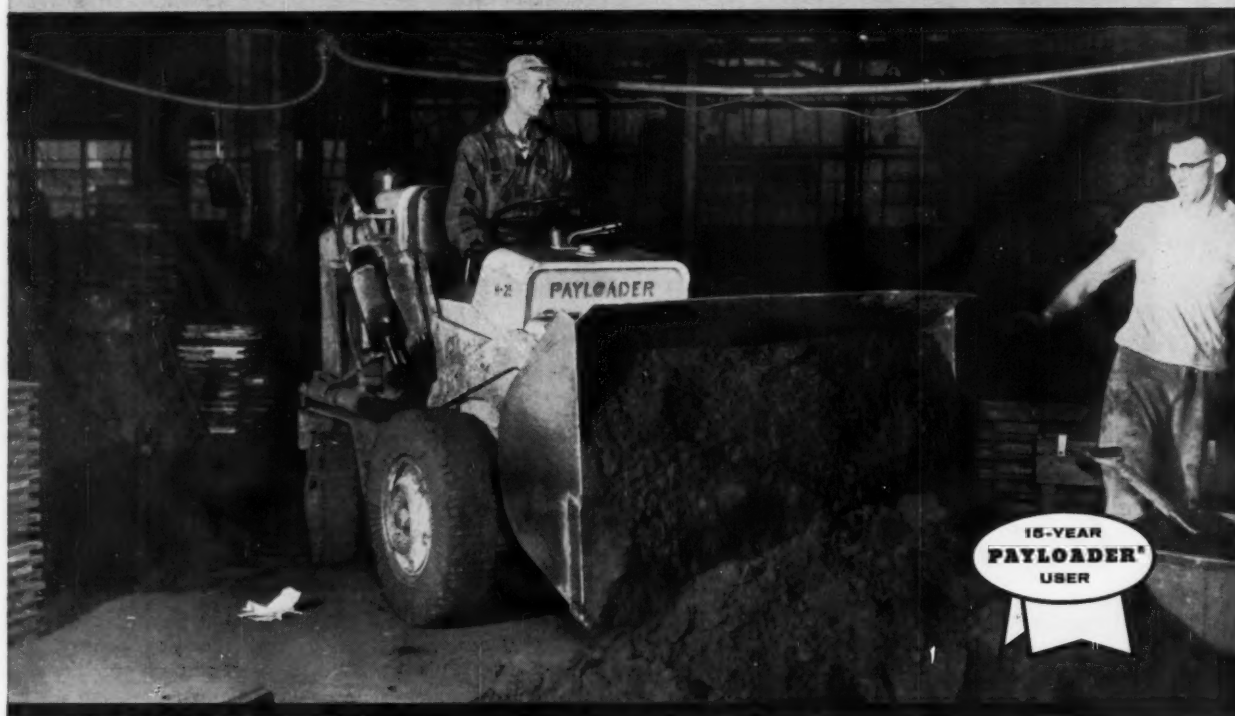
403 Broadway, Fairfield, Iowa

A Subsidiary of Mechanical Handling Systems Inc.

**SINCE 1867... THE FIRST NAME IN MATERIALS HANDLING**  
Circle 98 on Reader Service Card

# PAYLOADER®

PREFERRED BY FLEET OWNERS



**206**  
**FLEETS**

Among METAL PRODUCING MILLS and FOUNDRIES in the United States and Canada operating 3 or more "PAYLOADER" units totaling

**1518**  
**MACHINES**

It is significant that there are more "PAYLOADER" tractor-shovels in the Foundry and Metal working industries than all others combined. In addition to fleet owners, thousands of individual owners dating back as far as 20 years ago, have bought "PAYLOADER" over and over again for this rugged work . . . proof of the satisfactory performance and dependability built into each machine.

Among the many fleet owners is the CADILLAC MALLEABLE IRON CO. of Cadillac, Michigan, who today are using 5 "PAYLOADER" tractor-shovels. Their first "PAYLOADER" was purchased back in 1945. Mr. Whaley, company treasurer,

says, "We wouldn't have used "PAYLOADER" units exclusively for 15 years if we didn't like the equipment."

The "PAYLOADER" units are used to unload sand from boxcars, haul sand and castings to shake-out hopper, haul sand to muller and back to molding stations. In addition the machines also handle refuse, iron scrap and coke.

If you have a bulk material handling problem in your plant, see what a flexible, versatile "PAYLOADER" can do before you install any fixed material handling system. There are 20 models to choose from to fit your exact requirements. Send for complete details.



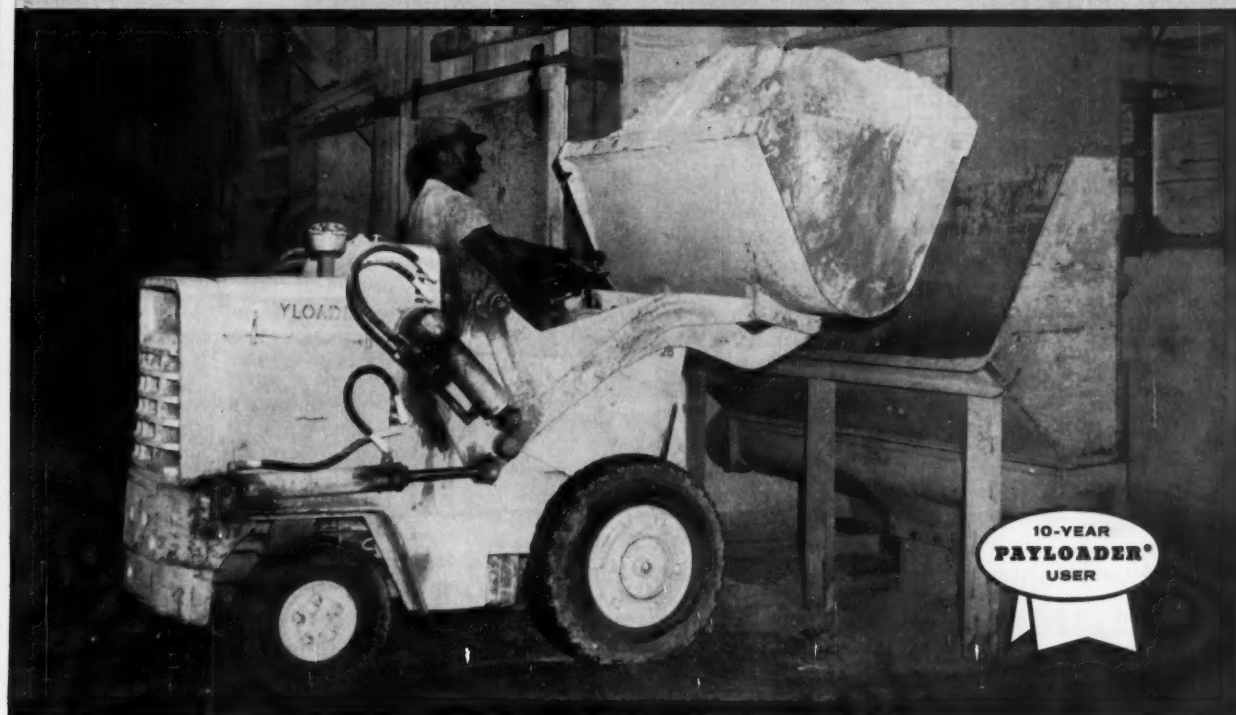
## handy hydraulic grapple

Special lift fork attachment combines powerful grip and lift with "PAYLOADER" traction, digs deeply into piles of metal scrap or tangled material to break-out heaping loads. Positive hydraulic kick-off device provides complete dumping of load. Independent hydraulic power on each grapple arm insures a firm grip on odd shaped loads. Carries 1500-lbs.



# PAYLOADER®

PREFERRED BY FLEET OWNERS



**245**  
FLEETS

Among CHEMICAL and FERTILIZER companies in the United States and Canada operating 3 or more "PAYLOADER" units totaling . . .

**3102**  
MACHINES

In addition to the fleet owners, thousands of individual owners have made "PAYLOADER" tractor-shovels the overwhelming favorite throughout all phases of the chemical and fertilizer industries. Fleets ranging as high as 230 machines are proof of owner satisfaction with "PAYLOADER" performance, service and dependability.

Typical of the many fleet owners, is the fertilizer plant of C. ROY CURTIS & SON of Marion, New York, with a fleet of 5 "PAYLOADER" machines dating back to 1950. All 5 machines are still in use. Says Roger Hubright, Plant Supt., "We have been using "PAYLOADER" machines

continuously for the past ten years, with very satisfactory all around production and mechanical service. We like the large load carrying capacity of our H-25 with its compact design which enables us to increase hauling output without modifying other plant facilities. H-25 has plenty of power and it's easy to operate."

You too will find a "PAYLOADER" a steady, dependable performer, with many exclusive features which contribute to greater output at lower over-all cost. Choose the exact machine to fit your needs from 20 models. Send for complete details.

# HOUGH®



**THE FRANK G. HOUGH CO.**

LIBERTYVILLE, ILLINOIS

SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER and PAY are registered trademark names of The Frank G. Hough Co., Libertyville, Ill.

**THE FRANK G. HOUGH CO.**

731 Sunnyside Avenue, Libertyville, Ill.

Send data on new H-25 "PAYLOADER".

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

4-A-1

WHEN THIS UNIT IS  
**DOWN**



YOUR COSTS GO



Beat the Problem by  
**LEASING** your  
Materials Handling  
Equipment from  
**RYDER**

If you're tired of taking a beating on costly "down-time" take a look at the Ryder lease, a real knockout of a solution.

Your capital is released for other needs. All you do is budget one economical monthly lease rate\*... let Ryder do all the WORRYING about "down-time," obsolescence, and costly repair bills.

It won't cost you anything and it could save you some big money by writing today for the "Full Story" folder from...

**RYDER TRUCK RENTAL**  
INC.

P.O. Box 33-816, Dept. A21, Miami, Florida



DIVISION OF RYDER SYSTEM

\*This rate can cover a complete Ryder leasing package including truck and car rental, if you wish.

Circle 138 on Reader Service Card

42



## MEN IN THE NEWS

At Vulcan Containers Inc. . . . Robert W. Hofmann is technical service representative, a newly-created post. Before joining Vulcan, he was employed for 20 years with the Flint Ink Corp. Hofmann is a member of the Packaging Institute and the Federated Paint, Varnish, and Lacquer Clubs.



At C & D . . . Joseph L. Swift represents the firm at its Atlanta, Ga., sales office. He is associated with Mark C. Pope Associates, the company's sales organization in Atlanta.

At Lewis-Shepard Products Inc. . . . John G. Maye is new

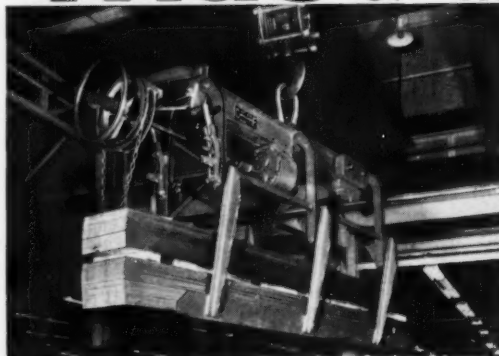
sales representative for the Milwaukee territory. His office has complete sales and service facilities. Maye, a graduate of Marquette University, previously served as a vice president and plant manager.



At Ingersoll Kalamazoo Division of Borg-Warner Corp. . . . new service manager for material equipment is Earl Anderson. He formerly was with Studebaker Corp. in South Bend, Ind. He succeeds Garrett Hoppe who died last August.

At Uhrden, Inc. . . . Ralph C. Greiner has been appointed

## Wide or Narrow...



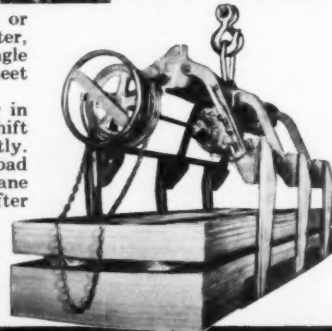
**1 C-F  
LIFTER  
HANDLES  
THEM ALL**

Whether your production requires a few or many widths of sheet steel, 1 C-F Lifter, with its wide range of jaw and carrying angle adjustments will probably meet all your sheet handling requirements.

Adjustments are made by the operator in a few seconds, permitting the Lifter to shift from wide to narrow sizes almost instantly.

Because it can pick up, carry and unload more loads per hour, using less man and crane time than any other method, a C-F Lifter will soon pay for itself.

Bulletin SL-30 gives you the complete story of C-F Lifter advantages to you. Ask for it today. There's no obligation.



**CULLEN-FRIESTEDT CO.**

1320 South Kilbourn Avenue • Chicago 23, Illinois

Circle 48 on Reader Service Card

**MATERIAL HANDLING ENGINEERING**

## MEN IN THE NEWS

(Continued)

Western sales manager. His office, in the San Francisco Area, serves 11 Western states.

At Darnell Corp., Ltd. . . . Thomas F. Crotan is sales engineer and service manager of a new Southeast Division factory branch in Atlanta, Ga. The office will serve Alabama, Florida, Georgia, Mississippi, North and South Carolina, Tennessee, and New Orleans.

At Divine Brothers Co. . . . field service representative of the Caster and Wheel Division is E. Lawrence "Larry" Lee. He will coordinate the general sales program and supervise company-dealer relationships nationwide. In



Lee

another appointment, Donald A. Miner Jr. is new assistant sales manager, Industrial Wheel Division. He will work in product design and sales and he will supervise company-customer relationships nationwide.

At Chisholm-Moore Hoist Division, Columbus McKinnon Chain Corp. . . . new sales representative is Richard A. Stevenson, formerly of inside sales department.

At Signode Steel Strapping Co. . . . Richard G. Patterson is Forest Products Industry manager, a newly-created position. He will coordinate sales and service to the forest products industry. In another appointment, J. H. Elsinger is manager of a new district with headquarters in Jacksonville, Fla. He will cover Florida and southeast Georgia and South Carolina.



Patterson



Elsinger



# EASY SAFE EFFICIENT LIFTING!

**IT'S EASY** to raise or lower loads while pulling a trolley mounted Coffing Quik-Lift Electric Hoist. The pistol-grip control station and the combination strain cable and control cord makes this possible. The light but strong aluminum housing provides ease of portability. Changing voltages, limit switch, type of suspension or chain is quick because the housing is in sections.

**FOR SAFETY** the control station is made of non-conducting plastic in which the voltage is reduced to 115 volts and the push-buttons are interlocked. The V-type brake which provides maximum braking surface and positive control of loads is another safety measure.

**FOR EFFICIENCY** this hoist has been designed to bring heavy-duty performance plus durability to the portable hoist field. It will pay you to specify Coffing Quik-Lift. Twenty models—capacities range from ¼ to 2 tons. Ask your distributor for details or write for Bulletin ADH-65.

## COFFING HOISTS

**DUFF-NORTON COMPANY**

821 Walter Street • Danville, Illinois

### COFFING HOISTS

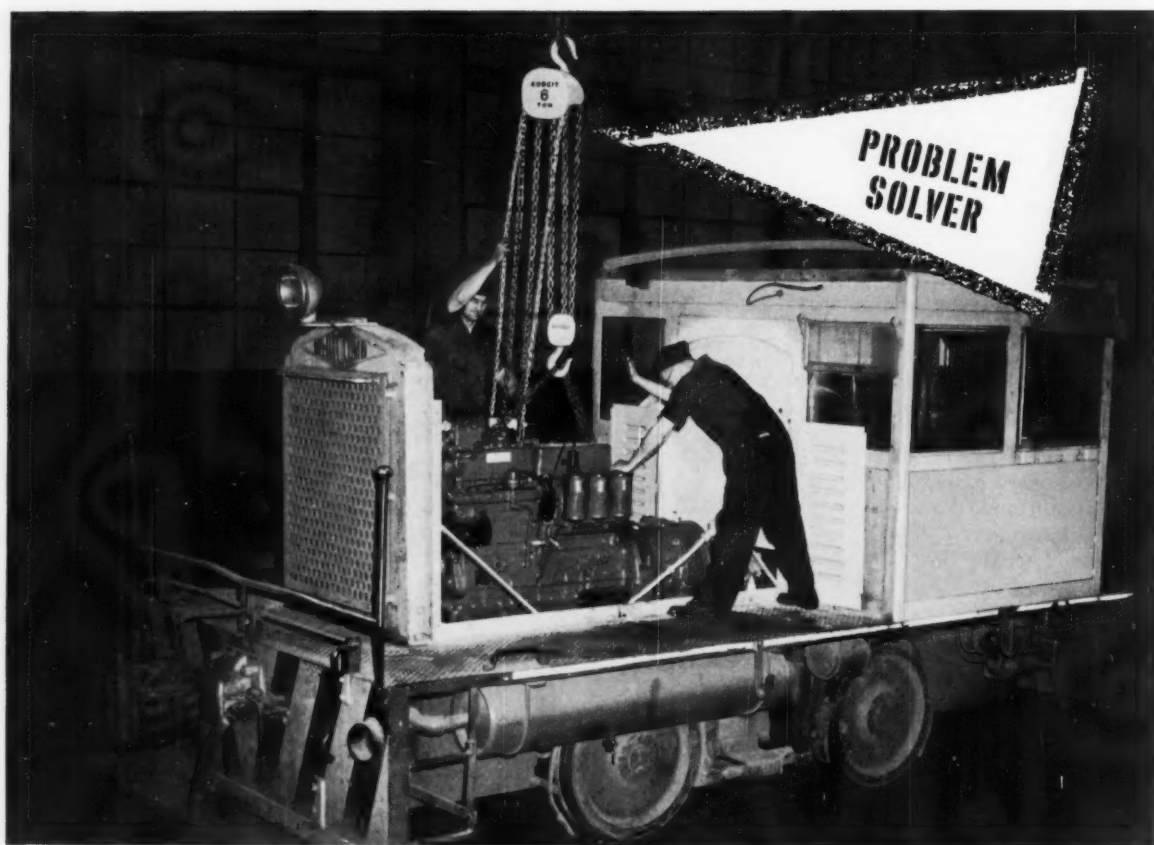
Ratchet Lever • Air  
Hand Chain • Electric



### DUFF-NORTON JACKS

Ratchet • Screw  
Hydraulic • Worm Gear

Circle 46 on Reader Service Card



## "BACKBREAKERS" wiped out by Budgit® Chain Blocks



\* REGISTERED TRADENAMES

60 C-1



### BUDGIT CHAIN BLOCKS

A product of

**MANNING, MAXWELL & MOORE, INC.**

Shaw-Box Crane & Hoist Division • Muskegon, Michigan

In Canada: Manning, Maxwell & Moore of Canada, Ltd., Galt, Ontario

Circle 106 on Reader Service Card

Eliminate tough lifting and plant maintenance ceases to be a costly muscle-aching job. A large midwestern heavy machinery manufacturer found this only too true. So now Budgit Aluminum Chain Blocks in various capacities are proving to be the perfect answer to countless lifting problems.

These lightweight hoists are easy to get to the job — easy to rig and operate at any angle. These features alone have won wide favor among the maintenance men. For instance, troublesome occasional jobs — repairing furnaces, dismantling machinery, handling large pipe, motors or valves — demand shifting as well as lifting.

Budgit Chain Blocks are also solving handling problems at numerous metalworking machines. Here the number of lifts per day are few but accurate "spotting" of heavy loads is now being done without backbreaking hand chain pull.

Backsaving Budgit Chain Blocks can cut your maintenance costs and also boost your production efficiency. Ask your nearby Shaw-Box Distributors to help you select the types and capacities best suited to your needs. Or write for Bulletin 15025-1C.

MATERIAL HANDLING ENGINEERING

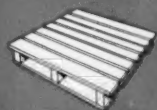


# HIGH LIFT L-S® JACKSTACKERS®

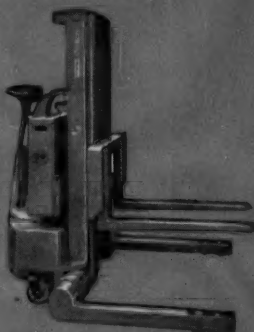
Stack Faster, Smoother, Safer . . .  
Give you exact inching & spotting!  
The One COMPLETE Line of High Lift Walkies — 4 Basic Models

## 1. STRADDLE TYPE\*

Capacities up to 6000 lbs.  
Lifting heights to 124".

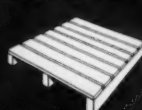


A narrow aisle (6' or less) "Walkie" truck. Basically designed to "straddle" and stack Single Wing Pallets. Can also be used with all other pallet types and Skid Platforms.



## 2. OPEN FACE PALLET\*

Capacities up to 6000 lbs.  
Lifting heights to 125".

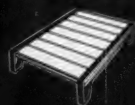


Another L-S narrow aisle "Walkie". Designed for all types of Single Face Pallets. Use also with other pallet types except Double-face. Handles Skid Platforms easily.



## 3. PLATFORM TYPE\*

Capacities up to 6000 lbs.  
Lifting heights to 129".



Here's still another L-S "Walkie" designed for narrow aisle operation. Use it where a Built-in Platform is desired or where Skid Platforms are to be stacked.



## 4. COUNTERBALANCED

Capacities up to 3000 lbs.  
Lifting heights to 130".

An all-purpose junior fork lift truck. Handles all types of pallets and Skid Platforms. Ideal for loading and unloading trucks and box cars. Has forward and reverse mast tilting. Good for grades and ideal for medium and short hauls.



All L-S Jackstackers have exclusive ROTO-CAM Handle — giving you finger-tip control for forward, reverse, two braking systems, lifting, lowering (also tilt for Counterbalanced Type).

\*Extra capacities available for low fork elevations up to 15,000 lbs.  
Higher lifts for lighter loads up to 200".



# LEWIS-SHEPARD®

The MASTER Line — The COMPLETE line of Materials Handling Equipment

LEWIS-SHEPARD, 134 Walnut Street, Watertown 72, Massachusetts

- Gentlemen: ☐ Please send me your JACKSTACKER Catalog 34-1  
☐ Please send me your Roto-Cam Control Handle Circular 34-H  
☐ Please have an L-S representative call

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

Circle 99 on Reader Service Card

*Truck values you can't see often count most!*



## George Rackle & Sons proved it in the case of the **CONCRETE TORTURE CHAMBER**

Staggering overloads, constant moisture and gritty concrete dust create a torture chamber for ELPAR electric trucks operating at the Cleveland plant of the George S. Rackle & Sons Company, the nation's leading fabricator of pre-cast concrete products.

Despite the rugged conditions, Maintenance Superintendent Ernie Hammerbacher says: "Our four ELPAR trucks do their jobs at 30% less maintenance costs than other kinds of trucks."

He says: "They're only rated for 4,000 pounds capacity but every one of them has handled 6,000 pounds without damage. That's a 50% overload."

"Part of their outstanding maintenance record comes from their ability to work well in areas where dust and moisture would clog and wear out other types of trucks... part of it is due to the fact that they're just plain tough!"

Whether you want to handle concrete slabs or ping pong balls, the built-in dependability and low cost maintenance of ELPAR trucks are extra values you can't afford to miss. You may not be able to see them but if it's an ELPAR electric you can be certain they are there.

Frank C. Botch:  
Field Service Supervisor



**The ELWELL-PARKER  
Electric Company**

4231 ST. CLAIR AVENUE  
CLEVELAND 3, OHIO

**Leading producer of electric powered fork, platform and crane trucks**

Circle 62 on Reader Service Card



## COST CUTTING IDEAS

### \$ Mill Chip Handling Speeded 30 Percent

Use of front end wheel loaders has increased the rate at which saw mill chips are unloaded by 30% for the International Paper Co., Spring Hill,

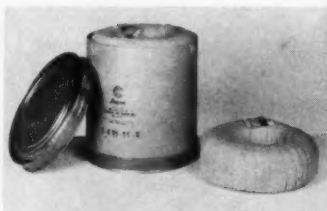


La. The chips are delivered in boxcars 7 days a week to keep pace with the firm's need for raw material. About 250 cords are unloaded daily, and an average of 100 cars are unloaded weekly. The Allis-Chalmers TractoLoader smoothly crowds a pile, as the bucket tips back 22 degrees to pick up scooping loads of chips. The compact loader then maneuvers in close quarters and dumps the load into the hopper above a conveyor room. Bucket capacity is  $\frac{1}{2}$  cu yd. When the car has been emptied sufficiently, the wheel loader moves right inside and unloads the chips directly from car to hopper. The Model T16 TractoLoader features screen and magnetic filters on the pump suction line.

Circle 250 on Reader Service Card

### \$ Fibre Drum Used As Wire Package

Four 25-pound paper wrapped coils of light gage copper and copper alloy wire are packaged in Stapak fibre drums by The Anaconda Company and its American Brass subsidiary. The drums are made by the Fibre Drum and Corrugated Box Division of Continental Can Co. They're exceptionally easy to handle. They permit one coil to

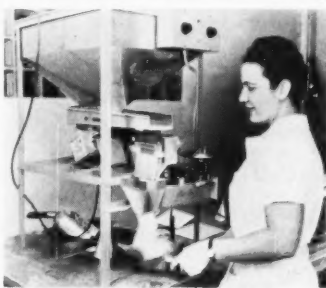


be removed for use while the others remain safe from dirt and contamination. Featuring a new Turn-Lock positive closure and pilfer-proof seal, the drum also stacks due to a cover and bottom that snugly interlock. The slightly flared cover allows handling without pounding or tugging.

Circle 251 on Reader Service Card

### \$ Accurate Feeders Triple Output

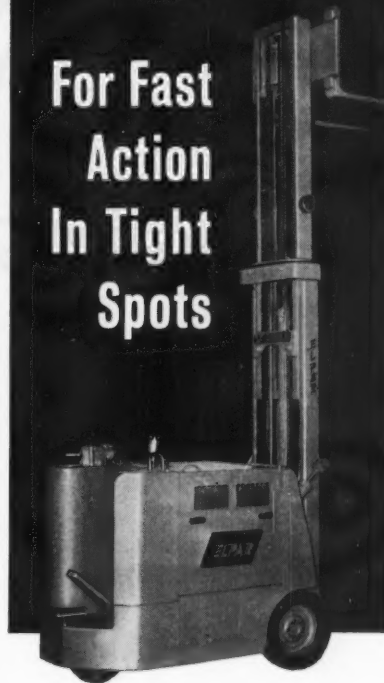
A weighing and feeding device has almost tripled output with half the labor for Morse Laboratories of Hoboken, N.J.



Manufacturers of antibiotic specialties for private labels, Morse has installed an Exactomatic unit. It's in a specially built, dehumidified room where powders and tablets are bottled. The machine provides extremely accurate weighing and simultaneous feeding of dry materials being packaged. An Eriez Hi-Vi Vibratory Feeder is placed directly under the two cubic foot hopper (see illustration.) The Exactron scale operates a micro-switch. When 99% of the required amount is fed, the feeder speed slows down to a dribble, stops when the exact weight is

## ELPAR "Cargo Scout"

For Fast  
Action  
In Tight  
Spots



### ■ SHORT TURNING

Short wheelbase, rounded rear corners and 180° turning angle of ELPAR's "Cargo-Scout" assure maximum maneuverability in narrow aisles, crowded docks and other confined spaces!

### ■ HIGH SPEED

ELPAR's high speed lift and travel plus fast acceleration assure more work in less time.

### ■ SAFETY

The stand-up operator's position on the ELPAR "Cargo-Scout" means he can get off fast in emergencies. Duplicate hand and foot controls make it easy to drive this truck backward when bulky loads limit forward vision.

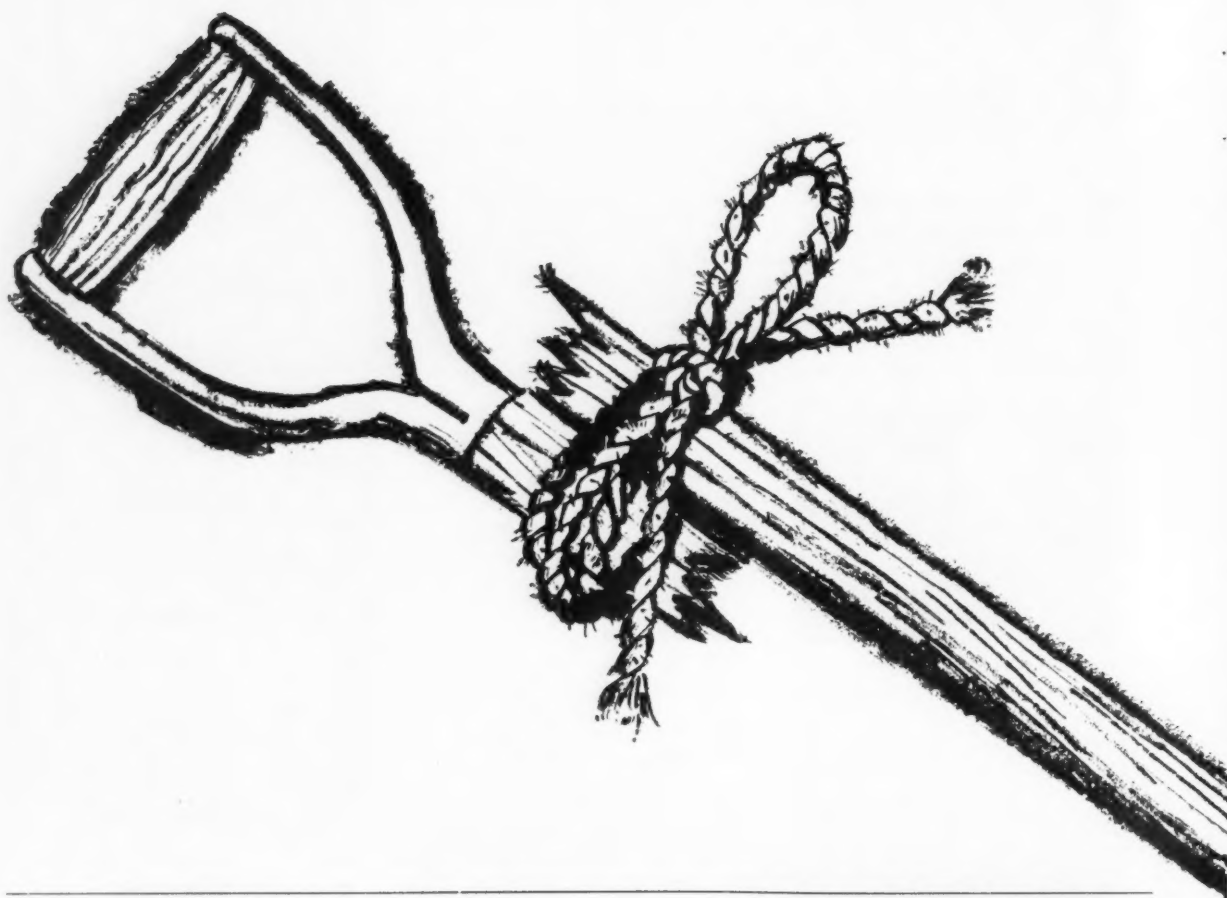
**4 models - 2, 3, 4, & 5,000 lbs.**

Write For Descriptive  
Catalog—Specify  
capacity required.



The  
**ELWELL-  
PARKER**  
Electric Company

4231 St. Clair Avenue, Cleveland 3, Ohio  
Circle 63 on Reader Service Card



## **COST CUTTING IDEAS**

*(Continued)*

reached. The scale is adjusted so that the larger amount is fed at a fast rate, and just a small tolerance at the dribble-rate.

Circle 252 on Reader Service Card

### **\$ Log Handler Ups Production 100%**

To solve its problem of low production and high operating costs, the Allison Lumber Co., Inc. chose a diesel electric fork



lift log stacker built by the R. G. LeTourneau, Inc. With the mammoth machine, the company was

able to go to a two-shift operation, previously impossible because a former method could not supply logs for two full shifts. The 25-ton capacity log handler lifts complete truckloads of logs with one bite—50 to 60 trucks a day. The stacker takes the logs directly from the truck to the mill. Or, if the mill is already supplied, it decks them in a storage area until needed. If the woods are down because of bad weather, the stacker goes directly to the decks to keep the mill going.

Circle 253 on Reader Service Card

### **\$ Special Forks Aid Brick Handling**

A Hyster lift truck, equipped with 6-tine hydraulic brick handling forks, kiln sets 183 cubes bricks (60,000) a day, an average of 7,500 an hour. This compares to an estimated 1,200 for hand setting. Kiln is drawn at the rate of 30,000 bricks a day, compared to 8,000 hand draw-



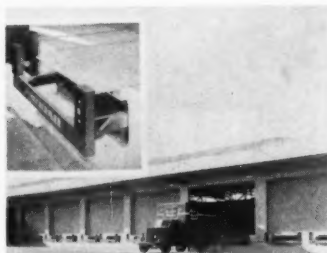
ing. Unit load handling of brick by an industrial truck allows better use of manufacturing facilities by accelerating setting and drawing production and reducing time between kiln firings.

Circle 254 on Reader Service Card

### **\$ 50% Savings In Unloading Time**

Twenty automatic dockboards have been installed at the Market Basket Eastern Avenue warehouse in Los Angeles. The

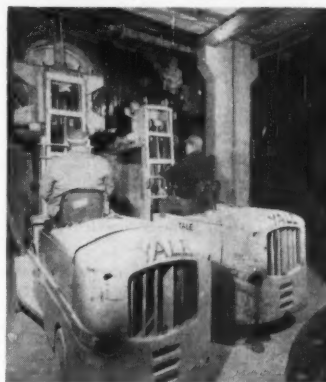




dock-leveler goes to work automatically the instant a truck backs into the operating arms and pushes the arms fully back. It raises to permit the truck to back under it, descends then to truck bed level. Smooth and easy travel is maintained between the truckbed and the dock as the height of the carrier varies with the changing of the load. When the truck leaves the dock, the dock leveler automatically returns to dock level. When not in use, it remains in level position, and the deck becomes part of the warehouse area. Each has 20,000 lb capacity. They have a lip travel of 22 inches.

## \$ Lift Trucks Position Huge Water Valves

Cramped operating areas and extremely close overhead clearances were a problem for the Ambrose Augusterfer Corp. of Philadelphia. They had to install large, heavy water valves in the



basement portion of a new water filtration plant for the city of Philadelphia. Solution: Yale, gasoline powered lift trucks in tandem maneuver the valves

through tight aisles and raise and hold them for installation.

Circle 256 on Reader Service Card

## \$ Drop-Side Trucks Speed Handling

Custom-built Kennett drop-side trucks speed plastic rod and tube processing for a prominent



plastics manufacturer. They simplify loading, unloading, and moving of work pieces. Made by the National Vulcanized Fibre Co., they allow prepositioned parts to be moved between operations. And they eliminate re-handling at the work station.

Circle 257 on Reader Service Card

## A MAKE-SHIFT HANDLING SYSTEM IS TOUGHER TO DETECT

Defects can be obvious or they can be hidden. When you choose something as complex as a materials handling system the defects may be hard to recognize.

Specify GUARANTEED American Monorail and relax in the knowledge that you cannot buy a safer, more dependable, more efficient overhead handling system. Our engineers are experts . . . we've specialized for 34 years.

Write for Free Booklet with  
56 pages, 99 photos.



ENGINEERED MATERIALS HANDLING

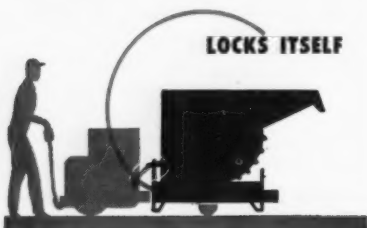
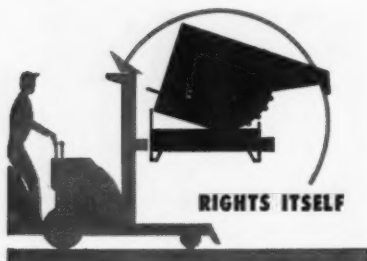
1129 EAST 200th STREET CLEVELAND 17, OHIO

DIVISIONS: Conveyor Division, Tipp City, Ohio - Canadian Monorail Co., Ltd., Galt, Ont.

Circle 5 on Reader Service Card



# AMERICAN MONORAIL



## Cuts handling time ...and costs...in half

Here's the fastest, lowest cost method ever devised for handling all kinds of bulk materials . . . hot or cold . . . wet or dry . . . such as:

Punch Press Parts . . . Cinders  
Hot Forging or Castings . . . Scrap Metal  
Pickles . . . Soybean Meal

A Roura Hopper fits any standard lift truck . . . attached or detached in seconds . . . can't slip off. One man does the entire job. Picks up loaded Hopper with lift truck . . . transports it to destination . . . flips the latch . . . and the Hopper automatically dumps its load, rights itself, locks itself. Cuts costs 50% or more.

They're sturdily made of heavy  $\frac{3}{16}$ " steel plate with continuous arc-welded joints. Five sizes from  $\frac{1}{2}$  to 2 yards capacity. Fitted with live skids or a choice of wheels. Standard models available for immediate shipment from stock. For special applications they can be made of stainless steel or galvanized.

# ROURA

## Self-Dumping HOPPER

### WANT MORE FACTS?

We'll give you full details . . . without obligation . . . if you'll attach this coupon to your letterhead . . . sign your name . . . and mail to . . .

**ROURA IRON WORKS, INC.**  
1411 Woodland Ave., Detroit 11, Michigan

Circle 136 on Reader Service Card

# CATALOGS and BULLETINS

offered in advertisements in this publication

Eliminate accidents . . . caused by slick floors and spilled inflammables. Find out about the Tokheim Hand Pump. Send for facts.

Circle 151 on Reader Service Card

Dumps, rights, and locks itself . . . that's a Roura hopper. Send for details from Roura Iron Works Inc.

Circle 136 on Reader Service Card

Double riggers' capacity . . . with an Austin-Western hydraulic crane. Find out how by using the handy number below.

Circle 8 on Reader Service Card

Regardless of size or handling delicacy . . . an Ashworth Metal Process Belt can do the job. Technical literature from Ashworth Bros., Inc.

Circle 7 on Reader Service Card

Engineered to fit your system . . . is one or more of the Barrett-Cravens Co. electric walkie trucks. Get complete facts from the company.

Circle 18 on Reader Service Card

Handle 3,500 stock items . . . quickly, at low cost with a Trak-Rak Crane. Send for complete details from Chicago Tramrail Corp.

Circle 50 on Reader Service Card

It's easy to raise, lower loads . . . while pulling a trolley mounted Cofing Quik-Lift Electric Hoist. Duff-Norton Co. will send you a bulletin.

Circle 46 on Reader Service Card

Strong, accurate, and stable roller chain . . . gives you the right kind of power transmission. Send for catalogs and engineering data from Diamond Chain Co. Inc.

Circle 53 on Reader Service Card

Complete motor interchangeability . . . permits use of any motor with integral disc brake on this line of hoists. Get details from The Euclid Crane & Hoist Co.

Circle 65 on Reader Service Card

A most complete range of storage and material handling racks . . . comes from Equipment Mfg. Inc. They also will design racks to your exact specifications. Circle number for complete catalog.

Circle 64 on Reader Service Card

Reach-in-under-over . . . to unload trucks, lift motors, machinery, crates, tilt drums, mate dies, all with Ruger

multi-purpose cranes. Circle number and get details.

Circle 137 on Reader Service Card

Save overhead space . . . with a heavy duty Type F hoist from Robbins & Myers. Find out about more than 40 speed load choices.

Circle 133 on Reader Service Card

Your equipment will perform more efficiently, give longer service . . . with Rockwell-Standard driving assemblies, torque converters, and planetary axles. Write for more information.

Circle 500 on Reader Service Card

Virtually indestructible wire containers . . . save money. Send for more information on these 1 and 2-ton capacity Wire-Tainers from Springport Steel Products Co.

Circle 145 on Reader Service Card

It takes fewer ties per bale . . . with Signode Steel Strapping. Find out how to save money on baling by circling the number.

Circle 141 on Reader Service Card

Get a smooth, speedy flow of cartons . . . from packing lines into trailer trucks with lift tables. Southworth Machine Co. will tell you how.

Circle 144 on Reader Service Card

Lease, rent, or buy material handling equipment . . . from Towmotor-Gerlinger. They'll be happy to describe their plans to you.

Circle 150 on Reader Service Card

One nailing machine drives more nails . . . than four hammers. Find out how it's done from United Shoe Machinery Corp.

Circle 154 on Reader Service Card

Simplify your material handling problems . . . with a Palletainer. Discover the many uses for these containers from Union Steel Products Co.

Circle 152 on Reader Service Card

For fast, easy addressing . . . of multiple carton shipments, try Weber Touch-Stenciling. A bulletin will tell how it's done.

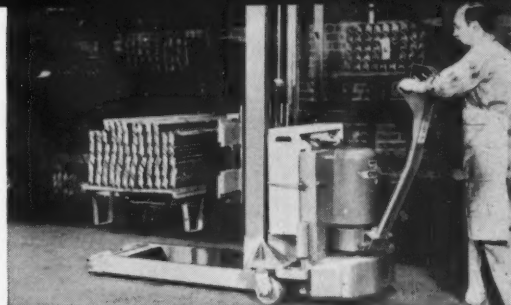
Circle 161 on Reader Service Card

Store more in less floor space . . . with Weld-Bilt portable electric elevators. Ask for information from West Bend Equipment Corp.

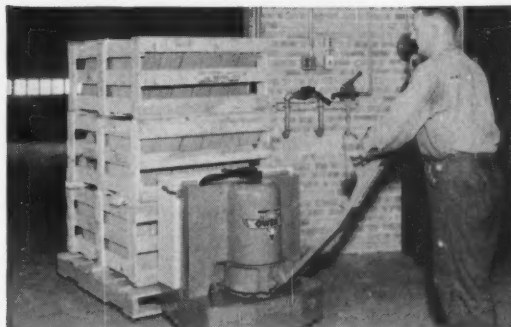
Circle 162 on Reader Service Card



Barrett's new TTG Hi-Lift Fork Truck handles so easily, with new hydraulic power, simplified controls. Worth investigating!



New Barrett HPG-40 Platform Hi-Lift Truck with new power controls, new ease of operation. Ask about it.



New Model PXG Walkie Pallet Truck features an important first: power up and power down! Check coupon.



New Model PG Walkie Platform Truck — 6-in. lift and exclusive single-frame design for greater underclearance.

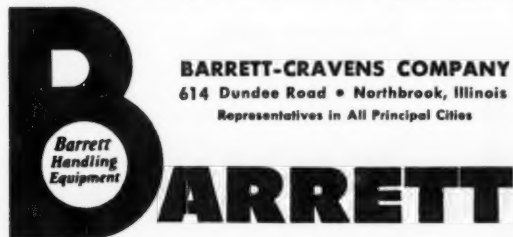
## New BARRETT electric walkies...engineered to your job

Selecting electric walkie trucks raises the usual question: Do they move your products most efficiently at lowest cost?

Once you and Barrett engineers conclude that walkie trucks best fit your system, you turn to Barrett's job-engineered electric walkie line.

Here you find new advantages. New, improved, ahead-of-the-rest features include a straight-line gear drive for greater efficiency, easier maintenance. You find simplified controls, easy maneuverability, long-life performance—and exclusive features such as power up and power down in the new PXG Pallet Truck.

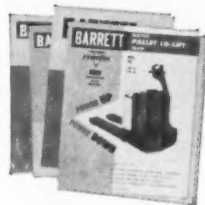
Then you readily conclude Barrett is your best buy!



**BARRETT-CRAVENS COMPANY**  
614 Dundee Road • Northbrook, Illinois  
Representatives in All Principal Cities

### Return coupon for complete facts

The coupon below lists all the equipment shown on this page. Check it to get complete information. Note: the new Barrett motion picture, "New Horizons in Material Handling," is worth seeing!



Barrett-Cravens Company  
614 Dundee Road, Northbrook, Illinois

Please send me bulletins on equipment checked: HPG-40 Platform Hi-Lift Truck..... PXG Pallet Truck..... PG Platform Truck..... TTG Hi-Lift Fork Truck.....

Please arrange motion picture showing.....

Name ..... Title .....

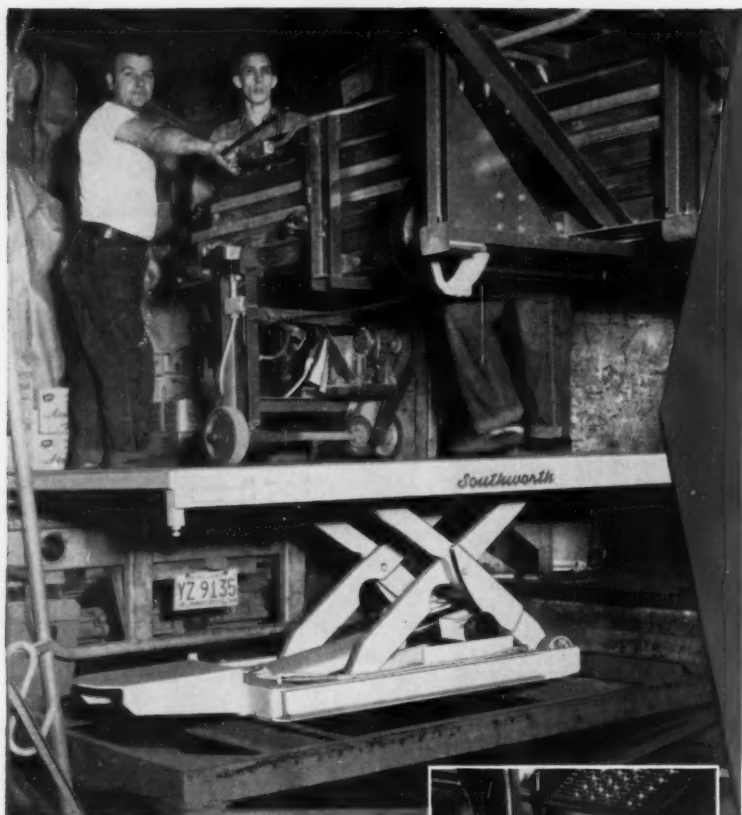
Company.....

Address.....

City.....Zone.....State.....

Circle 18 on Reader Service Card





Photos Courtesy of The Toni Company

**SOUTHWORTH**  
**"CUSTOM-ENGINEERING"**  
**SPEEDS**  
**THE TONI COMPANY'S**  
**TRUCK-LOADING**  
**with LESS HANDLING**

This unique installation in the shipping dock of The Toni Company plant makes use of two Southworth Lift Tables\* specially adapted to allow a smooth, speedy flow of cartons from packing lines directly into trailer trucks. Mounted on a steel platform, each table receives cartons individually or on skids, adjusts to be flush with any truck bed regardless of height. By reducing lift truck dependence, by speeding the loading of trucks with *less* handling, enabling trucks to move goods *faster* than ever before, once again Southworth helps cut operating costs. Why not let our "custom-engineering" help you achieve maximum handling efficiency in *your* plant? Write:

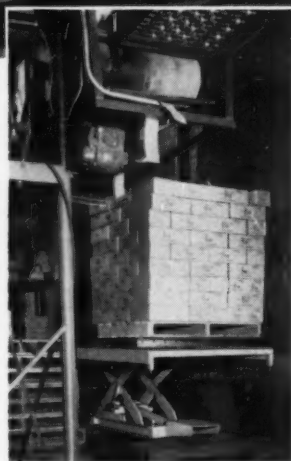


\* PATENT PENDING

**SOUTHWORTH**  
**LIFT TABLES**

a division of SOUTHWORTH MACHINE CO., 430 Warren Ave., Portland, Me.

Circle 144 on Reader Service Card



**CATALOGS & BULLETINS**

(Continued)

A road-to-rail convertible . . . called a Trackmobile, solves traffic problems, expedites car movement, and keeps railyards bustling. Send for information from Whiting Corp.

Circle 164 on Reader Service Card

Get steady, economical lift truck operation . . . with an Allis-Chalmers. Find out more information from the company.

Circle 3 on Reader Service Card

Long wear and soft ride . . . go with Disowheels. Discover how well these wheels perform from Disogrin.

Circle 54 on Reader Service Card

Save up to 1/3 . . . on the cost of your next conveyor. Find out how from a handbook put out by Standard Conveyor Co.

Circle 146 on Reader Service Card

Your batteries last 25% longer . . . with Silconic plate from Gould-National Batteries Inc. Send for complete information.

Circle 76 on Reader Service Card

Get along with narrower aisles . . . by using tiering trucks and walkies from the Raymond Corp. Send for free bulletins.

Circle 128 on Reader Service Card

Reduce driver fatigue . . . improve safety with a Hyster Monotrol equipped 5,000-lb. cushion tire truck. Send for literature.

Circle 82 on Reader Service Card

You need only a hex key, hacksaw, and Rackmaster fittings . . . to build, change, expand, or move your storage racks. Find out how from The Hollaender Manufacturing Co.

Circle 80 on Reader Service Card

Move men, materials, and equipment at lowest cost . . . with Kalama-zoo Speed Trucks. Get information on the five models.

Circle 89 on Reader Service Card

Beat premature rim separation . . . with Monarch solid tires. Send for information from The Monarch Rubber Co.

Circle 112 on Reader Service Card

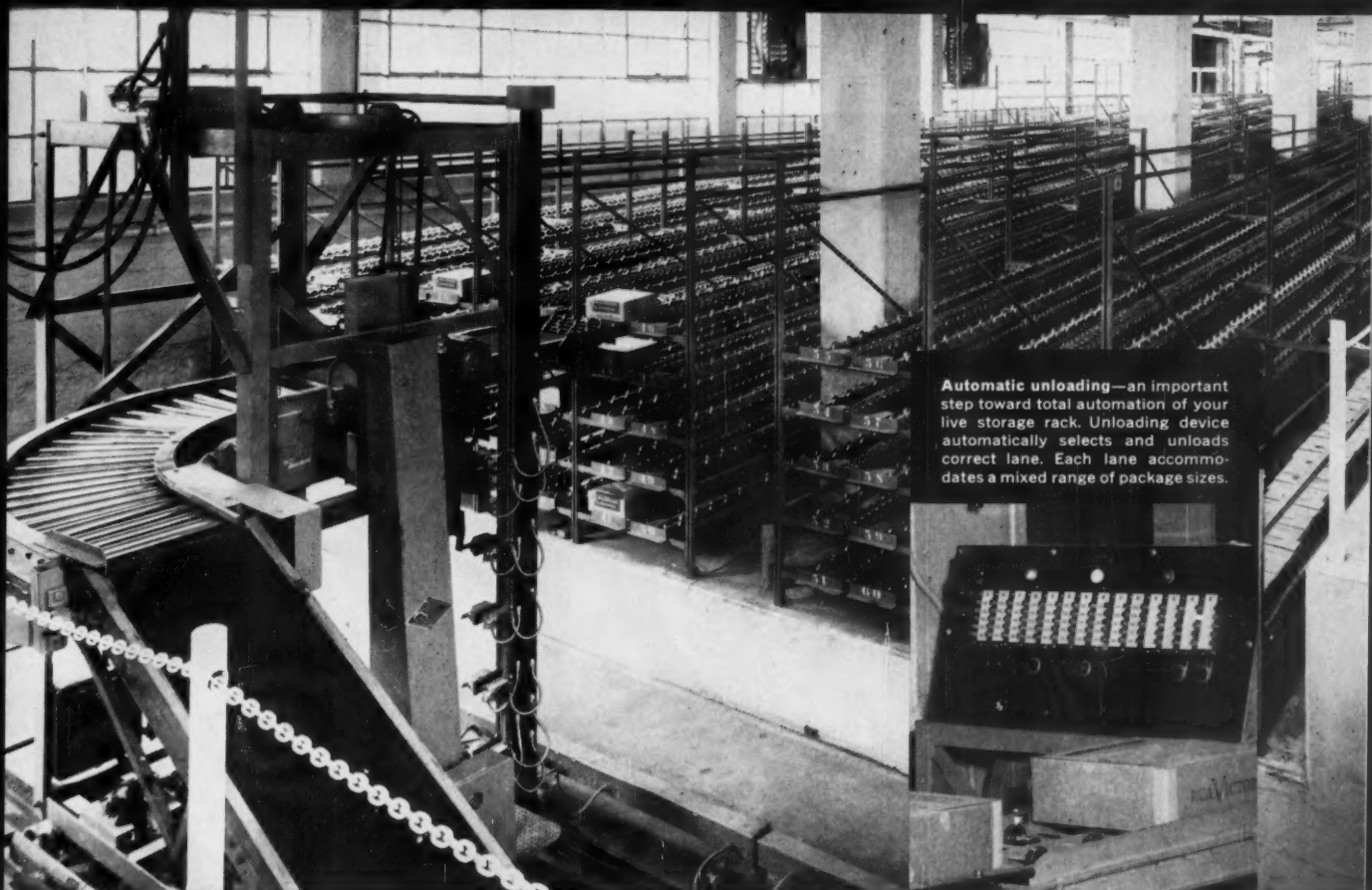
Ship volume quickly . . . with Multistamp stencil addressing system. Send for how-to and why book from The Multistamp Co.

Circle 115 on Reader Service Card

Eliminate tough lifting . . . with Budget Aluminum Chain Blocks. This product from Manning, Maxwell & Moore Inc. makes the job easy.

Circle 106 on Reader Service Card





**Automatic unloading**—an important step toward total automation of your live storage rack. Unloading device automatically selects and unloads correct lane. Each lane accommodates a mixed range of package sizes.

**Push buttons** actuate removal from storage. Same operation can be accomplished by tape or card control, if desired.

## A-F LIVE STORAGE RACKS

### Automatic warehousing... by tape... by card... by push button

Your AF Live Storage Rack *can be* totally automatic—even to the point where packages actually dictate their own route and “find” their own storage—then unload themselves after a specified period of time, as needed. The rack shown is unloaded by push-button remote control. One man (or woman) removes items from storage without moving from the control console. This same operation can be actuated by tape or card control if desired.

Perhaps your plant is ready for this kind of automation—or perhaps it's still a few years away. The important point is that when you invest in your live storage rack, you have purchased the basic element for your future automatic warehouse. It will give you great benefits today—whether loaded and un-

loaded by hand, by lift truck, or by other mechanical devices. Then, at a later date, it can be converted—simply by adding automatic loading and/or unloading devices.

Whatever degree of automation you specify, the fundamental advantages of live storage will be yours from the outset—orderly storage, elimination of needless walking and confusion, fool-proof first-in first-out control, space saving and many other benefits.

Our engineers will gladly survey your present storage facilities, make suggestions on cost-saving improvements and submit a proposal. In addition, we will help you determine just how automatic your system should be—for maximum benefit to you today and tomorrow. Write today for complete details.

Circle 4 on Reader Service Card



*A-F founded the package conveyor business in 1901*

**The Alvey-Ferguson Company, Dept. UD-4, Cincinnati 9, Ohio**

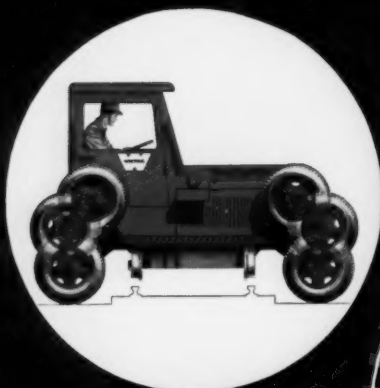
## A-F Conveyors

**Custom Engineered Conveyor Systems**  
**Packaged Conveyors—Wheel, Roller, Belt, Trolley**  
**Pan and Rack Washers**

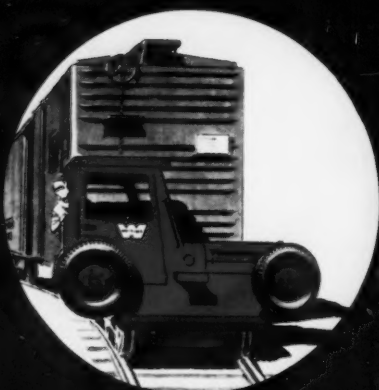
**Metal Cleaning and Processing Equipment**

# TRACKMOBILE®

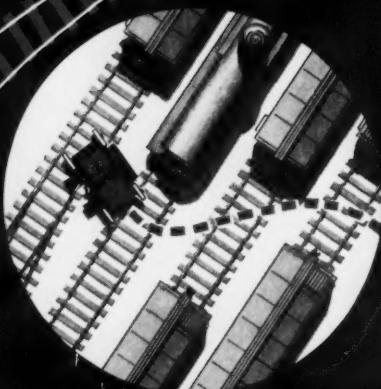
MAKES FREIGHT CAR HANDLING FAST, EASY, ECONOMICAL!



It's not "tied to tracks"!



It switches, spots, hauls!



It can't be bottled up!

## NEW CONTROLS ADD TO TRACKMOBILE'S VERSATILITY!

In addition to manual operation, other optional control systems are available to broaden your dollar-saving opportunities with Trackmobile. Ask Whiting for more information on:

- Telephone Dispatching
- Cab-Pendant Control
- Radio Remote Control

freight car handling

"economy zone"

## SEE HOW TRACKMOBILE SAVES MONEY!

See in a quick series of pictures how Whiting's road-to-rail "convertible" solves traffic problems, expedites car movement, keeps your railyard bustling. Write for Bulletin T-131: Whiting Corporation, 15624 Lathrop Avenue, Harvey, Illinois

See Our Catalog in SWEET'S

87 OF AMERICA'S "FIRST HUNDRED" CORPORATIONS ARE WHITING CUSTOMERS



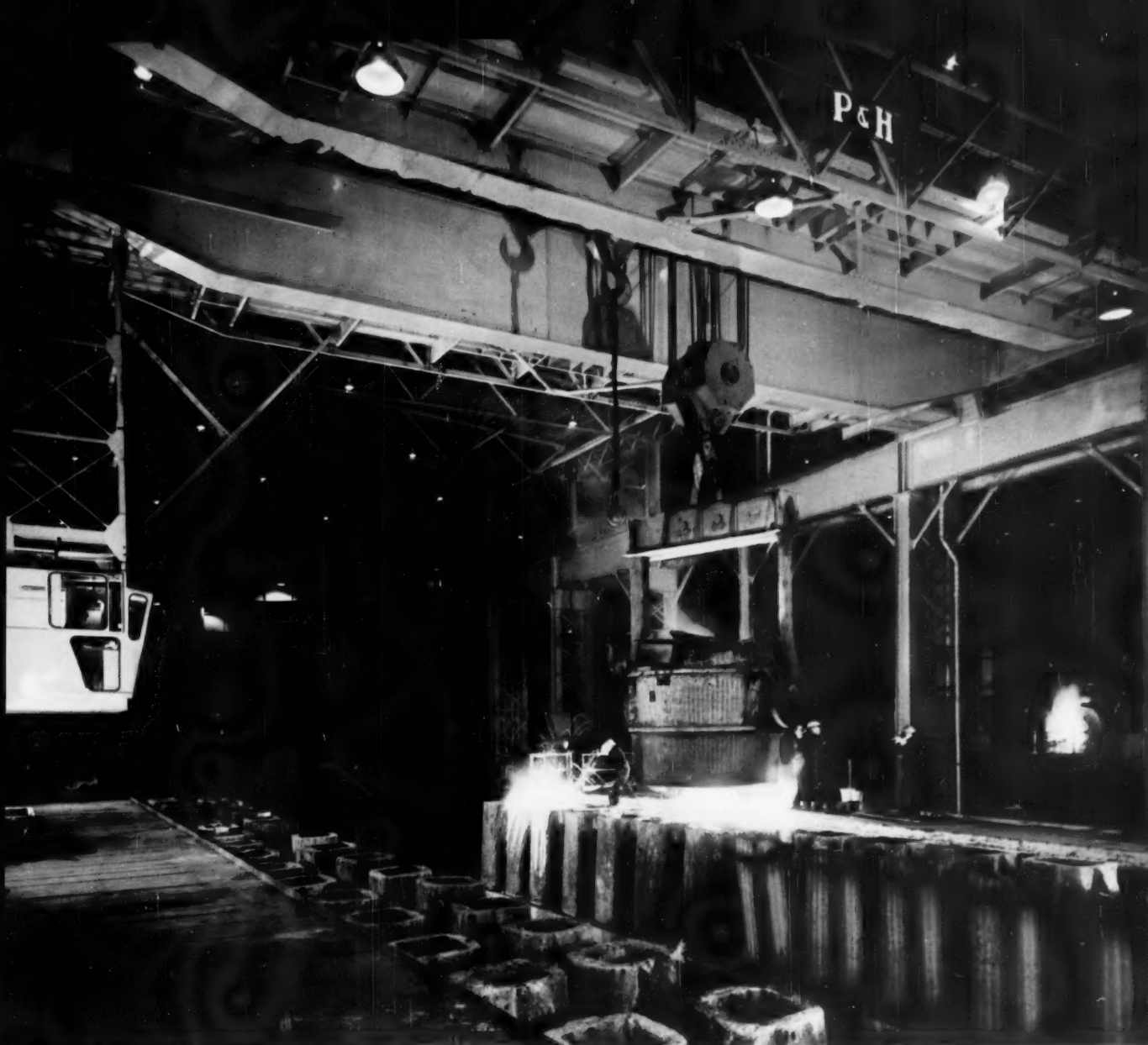
# WHITING

MANUFACTURERS OF CRANES; TRAMBEAM® HANDLING SYSTEMS; PRESSUREGRIP®; TRACKMOBILES®; FOUNDRY, RAILROAD, AND SWENSON CHEMICAL EQUIPMENT

Circle 164 on Reader Service Card

MATERIAL HANDLING ENGINEERING

Circle 79 on Reader Service Card →



*Photo courtesy Acme Steel Company, Riverdale, Illinois.*

## FOR EVERY APPLICATION, THERE'S ONE CRANE OUTSTANDING...

**IN STEEL MILLS:** This 100-ton P&H crane lifts, transports and "spots" tremendous loads of molten steel as surely and deftly as you handle a coffee cup.

P&H steel mill cranes perform tasks like this effortlessly and dependably because they are specifically designed for steel mill service . . . to handle massive loads, withstand searing heat, ignore frequent shock loads.

What's more, P&H carefully engineers every crane to meet specific job requirements . . . to consider all factors affecting performance. Special operating problems are taken in stride. Result: P&H cranes chalk up almost unbelievable service records month after month, year after year, decade after decade.

Isn't this the kind of performance you want, too? Write for bulletin C-42 to Dept. 120, Harnischfeger Corporation, Milwaukee 46, Wis.

*P&H enclosed cabs have full-view safety glass windows, for unrestricted view of work area. Cabs can be heated and air conditioned where cold, heat, smoke or fumes render ordinary cabs uncomfortable or unsafe.*



**HARNISCHFEGER**  
Milwaukee 46, Wisconsin





*Photo: Courtesy Isaacson Iron Works Co., Seattle, Washington*

**P&H PRECISION  
CONTROL  
SPOTS HEAVY  
STEEL ACCURATELY,  
SAFELY**

This West Coast steel-fabricating company depends on P&H Balanced Design Hevi-Lift hoists to keep heavy steel beams and fabricated structures moving through its shops.

Note the unique method of installation which provides a high degree of flexibility . . . hoists can be used alone — or hoists can be teamed up to handle extra-long sections.

This company selected P&H Balanced Design Hevi-Lifts because they will stand up longer, under heavier duty cycles — with less maintenance — than any other hoist they could buy. Reason: Balanced Design means that every component has been balanced with every other component for maximum strength and performance characteristics.

If uninterrupted through-the-air material handling is important to you, too, then it will pay you to find out more about these new hoists. Send for bulletin H-55, Dept. 222, Harnischfeger Corporation, Milwaukee 46, Wis.

**HARNISCHFEGER**  
Milwaukee 46, Wisconsin





## **ON COSTS, OBSCURATION AND COOPERATION**

Our thanks to all who have said a kind word about our February page, "Let's Cut The Confusion." (You may remember that we stressed the need for standards by which material handling costs might be measured and compared.)

Obviously, the need for such standards is widely and keenly felt. Actually, we were surprised at the response. We heard from many industries—from individuals, associations and societies, from manufacturing and non-manufacturing firms. They're all anxious for something that will help them accurately label their handling, packaging and shipping costs. They've offered advice and assistance. (Any others who would like to get in on this project will be most welcomed.) It seems safe to promise some real action and results this year. We'll keep you posted.

There's another kind of cost discussed in this month's issue. It's part of the cost of equipment and services. Many feel it but do not see it. One of the characteristics of our burgeoning technology has been the extent to which suppliers have provided advice and engineering service. As the science of handling grew so did the complexity and extent of systems companies desired. So also did costs of equipment. Maybe we can help by eliminating suppliers' unnecessary expenses. Be sure to read, "The High Cost of Free Engineering" on page 58.

Applications of automation are limitless, popular and newspaper writers would have us believe. We've heard of automated offices, hospitals, drug stores, libraries, restaurants, banks and car washes. What makes the word so fascinating? Perhaps it's used so widely because it's so misunderstood. Or maybe there are many people who can write "automation" easier than they can "material handling" or "mechanization." And, of course, there are those who have obscured the real meaning for their own purposes.

We've pounded hundreds of words and talked dozens of hours about the misuses of "automation." But the latest leaves us wordless and speechless. An erudite publication reported, "Automation comes to the band business" . . . in an article about an electronic organ with automatic cha cha beat.

A new spirit of management-labor cooperation seems to have followed last year's strikes. It might be the result of sober reflection because business did not get off to the early 1960 boom many expected. An Ohio hardware manufacturer said: "We have one of the happiest shops I can remember. Virtually no absenteeism. They're producing better than before, too. We may be able to hold prices in spite of higher material costs." A brass mill supervisor noted "quite an improvement in worker cooperation since the steel strike ended." Harlan Byrne, in a Wall Street Journal feature, reported dozens of instances where steel workers and management men reported more cooperation, higher productivity since the strike ended.

It couldn't happen at a better time.

*Ed Leighton*

Executive Editor



# The High Cost of

Everyone should take advantage of design help gladly given by manufacturers of engineered material handling equipment. But, like any good thing, this free engineering often is abused. The results can be high equipment costs and poor operating results.

line conveyor. Nothing fancy, but not standard with any manufacturer.

In order to prepare bids, potential suppliers would have to prepare complete drawings which would include necessary modifications.

Company A sent sketches and brief specifications to 18 conveyor manufacturers for quotations. All responded.

Eight of the 18 bidders were disqualified because their type of equipment was unacceptable. (for design restrictions which had not been clearly stated in the original specifications.) Company A then instructed each of the 10 remaining bidders, separately, to: "re-check your design, your price is not in line." This meant that all 10 manufacturers had to send sales engineers to discuss the bids with Company A's engineers. Many of them had to come from out of town.

Three months later, after three rebidding cycles, the conveyor was bought for about \$40,000.

On the surface, Company A appeared to have been cautious and smart. By taking plenty of time to investigate many types of conveyors and by playing one manufacturer against the other, until the price could go no lower, they had saved money while getting the best possible system.

But had they?

Here's what they really did:

*They wasted more than \$9,000 worth of engineering effort just finding out who could bid on the system.*

Each of the 18 conveyor manufacturers spent about \$500, in pre-bid design. Altogether, this amounted to 22% of the total cost of the job. True, Company A did not pay for it on this particular job, but subsequent customers of the bidding companies—possibly you—did.

*They added to sales expense while paring prices.*

When bid rechecking started, the 10 bidders who had passed the first hurdle had to absorb several hundred dollars in sales expense.

*They wasted their own time.*

Company A's engineers and purchasing agents had to sit in on more than 30 time-consuming conferences with sales engineers.

*They caused high construction costs.*

By the time a conveyor supplier had been selected, they were dangerously close to the deadline for starting production of the new model. As a result, installers had to work overtime (at Company A's expense) and the savings they thought they made through bid shaving were wiped out.

It was a costly experience. It resulted from unwise purchasing policies and wasteful use of free engineering. But Company A is

**Y**OU'RE rare if you have never added to material handling equipment costs through unwise use of so-called free engineering.

Free engineering is, of course, design help from engineered equipment manufacturers who are bidding for your business. It's valuable. In many instances, indispensable. You just wouldn't buy complex conveyor systems, overhead cranes, or any equipment requiring special design without depending upon the supplier to do a substantial part of the engineering.

But free engineering is never really free. Sometimes, it is extremely costly.

Example: Company A, a heavy machine manufacturer, was planning an assembly line for a new model. The engineers, after some preliminary design, decided that they needed a high capacity, heavy-duty, straight-

# Free Engineering

by John D. Velardo, Editor

not alone. Large and small firms throughout industry do the same sort of thing. Combined, they are responsible for keeping material handling equipment costs at artificially high levels.

Abuses of free engineering services take several different forms. Which of the following descriptions fit you?



## The Scatter-Shot Requisitioner

The most common offender. He asks too many potential suppliers to bid. Company A is a prime example.



## The Engineering Free-Loader

There are two species:

a. *The Contract-It-Yourself-er* hurts only himself. He will ask potential suppliers to provide detailed drawings. Then, he will

buy his components and have them installed by local crews who might not have material handling experience. It's cheaper this way, at the start. But remember, you have to pay for every mistake, every revision.

In the long run, it is cheaper and certainly safer to pay a reliable equipment manufacturer to bear the responsibility for seeing that the system you want is installed on time and operating the way you want it.

b. *The Blue-Print Peddler*. He not only adds to costs, but is guilty of unethical practices. He has an ace-in-the-hole, the *No Engineering Overhead-er*, whom he doesn't call on until after one or more of the reliable manufacturers have designed a good system.

The *No-Engineering Overhead-er* does no design work, just sells and installs equipment to your specifications. As when you contract for yourself, though, blueprint peddling looks good only at first. Once your system has been installed, you're on your own.

There's another pitfall. It doesn't take suppliers long to find out that you are picking their brains.

Example: Company B, a manufacturer of drain tile, asked a distributor of handling equipment, the Zee Corp., to help it design a new storage and han-

dling system. Zee's engineers spent two weeks designing a rack-container system. Complete drawings and prices were submitted.

A few days later, the owner of a small metal fabricating job shop called a Zee Corp. executive.

"We have been asked to bid on a job that should be up your alley. Your products were just made for this type of application," the job shop owner said.

Further discussion revealed that he was talking about the system designed by Zee Corp. Even the drawings were the same, although they now carried Company B's title block.

The Zee Corp. executive called Company B and told them that portions of the system were patented and any other supplier would have to be licensed to provide the equipment. The extent of Company B's blueprint peddling became obvious during the next few weeks when 18 would-be bidders asked Zee Corp. for clearance.

You can expect a big change in vendor attitudes once they learn about your peddling activities. You'll get only sketchy information with bids, if they even bother to bid. Or, submitted drawings might contain intentional errors which, if built into the system, could mean trouble from then on. Harsh retribution for a little innocent

## High Cost of Free Engineering

brain picking? Yes, but it is the sales engineer's only means of protection.



### The Bargain Hunter

This abuser of free engineering works in two ways. He will buy price over all other considerations, or he will put bidding on an auction-block basis.

*a. Price Buying*—Closed bid-contracts for multi-thousand dollar systems have been awarded for a price differential as low as one dollar, regardless of design considerations.

When price becomes this important, it is at the expense of more important factors, such as operating efficiency, maintenance requirements and length of life.

Example: Company C decided it needed a new handling system. Its engineers submitted rough specifications to six possible suppliers. Five followed the specifications. The other company cut corners. It took exception to several requirements listed in the specifications and as a result was able to underbid the others. It got the contract.

Company C saved money then, but has been paying the difference over and over in attempts to get the equipment to perform as it should.

*b. Auction-Block Buying*—Company D needed three overhead cranes. Seven manufacturers were asked to submit drawings and to bid on the installation. After all had responded, each was told separately that his bid was too high. Each was given a chance to re-bid. When the second bids were in, they were called in again and told the same story. It happened a third time.

Finally, the contract was awarded. But at what cost?

*Every time a supplier prepared a new bid it cost him about 30 hours of engineering time. At a conservative rate of \$10. an hour, this amounted to about \$300. per manufacturer. A total of \$2100.*

*Every supplier salesman call required the attention of a Company D engineer.*

*During re-bidding, production was held up.*



### The Purchasing Autocrat

The purchasing agent should be, and usually is, an important person in a company's operations. Sometimes, by management edict, he is an untouchable, charged with making profits, on the firm's purchases. A valuable contribution, if carried out intelligently. Yet, when not properly guided, the purchasing agent can save a dollar and waste hundreds.

Example: Company E operates a processing plant. It wanted to install a system which would save 4¢ a pound of product. It processes about 300,000 pounds per month. Thus, the day the new system went into operation they would save \$12,000. per month.

Company E's engineers called on a consulting engineer to help design the new system. He was paid a fair fee for his services.

Wy Corp., an equipment manufacturer, was asked to bid on the system that the consultant had drawn up.

In preparing its bid, Wy Corp. found several areas where it could improve on the consultant's design. They redrew the system, incorporating the changes and submitted them to Company E and the consultant.

Both accepted the changes in every detail and agreed that the price was satisfactory.

The day the purchase order was to be issued, another vendor came in and quoted an off-the-cuff price 30% below Wy Corp.'s. The purchasing agent saw a chance to save a lot of money and, acting within his rights as established by management, awarded the contract to the second manufacturer. The engineers weren't even consulted.

The equipment was installed in accordance with Wy Corp. specifications. Then the troubles started.

The system did not work right until eight months after the date Wy Corp. had guaranteed smooth, full speed production.

*Eight months of lost production, at potential savings of \$12,000 per month, adds up to \$96,000 worth of savings lost forever because the purchasing agent could not see beyond the immediate profit he was making for his company.*

Sometimes, the purchasing agent's ivory tower becomes a fortress.

Example: Vee Corp., a sales organization for engineered equipment, received an inquiry from Company F. The information it contained was hard to understand so the Vee Corp. salesman called Company F's purchasing agent. He was of no help.

"Tell me the name of the engineer who wants the equipment. I'd like to talk to him about this", the salesman asked.

"Sorry, I can't do that", was the answer, "You'll have to deal exclusively through me."

With the salesman on the outside line, he called the engineer on the inner office phone and carried on a double conversation with the two phones, in best movieland business man style. He relayed questions and answers back and forth, probably distorting both enroute. Because of the complexity of the equipment



## HERE'S HOW YOU PAY . . .

Widespread abuse of free engineering is costly to everyone. You pay through:

- \$ High suppliers sales expenses. These costs must eventually be passed on to you and other users.
- \$ Waste of costly time of your own engineers and purchasing men.

- \$ Higher construction costs.
- \$ Delays and loss of production savings which the new system will give once it is running.
- \$ High maintenance costs.
- \$ Inefficient operations.
- \$ Loss of reputation with suppliers.

involved, the sales engineer was not able to get enough accurate information to justify his taking time to design a system and submit a proposal. He dumped the inquiry in the waste basket.

The Vee Corp. sales engineer lost a sale, but more importantly, Company F lost the benefit of his design help.



### The Panic Buyer

The equipment you buy will have to operate for a long time. Allow your suppliers enough time to design it properly. Otherwise you might have a unit which won't operate at all.

Example: Company G needed a special overhead handling system. Because of the type of operation, standard equipment could not be used. A modified design was necessary. Here's the time schedule which was followed in purchasing this expensive equipment:

**Monday**—Two manufacturers were notified that Company G needed the equipment. They were told that their proposals, complete with drawings and specifications, had to be submitted no later than Wednesday of that week.

**Tuesday**—The two manufac-

turers were advised, "If you do not have your bid in by noon tomorrow, you will not even be considered for the job. We've got to move fast on this."

One company chose to develop the best possible plan despite the ridiculously short time allowed. They put their best engineer on the job, around the clock, Monday and Tuesday, right up to the Wednesday deadline. He designed a good system that took into consideration the special problems involved.

The other Company gave Company G what it probably deserved, a short-cut system not tailored to the specific needs. Its price was lower by far.

**Wednesday**—The contract was awarded, strictly on price.

**One Year later**—the equipment sits idle. It never has worked properly and is a silent, costly monument to panic buying and mis-use of free engineering.

### Solutions

Answers to these problems must be found by you, the user of material handling equipment. It has to be that way.

Equipment manufacturers and their representatives are glad to provide you with engineering help. They want a chance to bid on all material handling equipment you will have installed. It would be unreasonable to expect, companies in competition with one another to divvy up your business. It's probably unlawful.

Since excessive bids and improperly placed orders are paid for by you it is to your advantage to make the most efficient use of special engineering help.

How?

MHE's editors discussed the matter with users, manufacturers, distributors and consultants. Here is a summary of their suggested solutions:

- Don't be a scatter-shot requisitioner. Keep the number of bidders low. One if possible. Never more than three.

- If you want engineering help from more than three firms, pay for it.

- Tailor the firms you call in to the job you want done. Learn all you can about them . . . past performance, experience, etc.

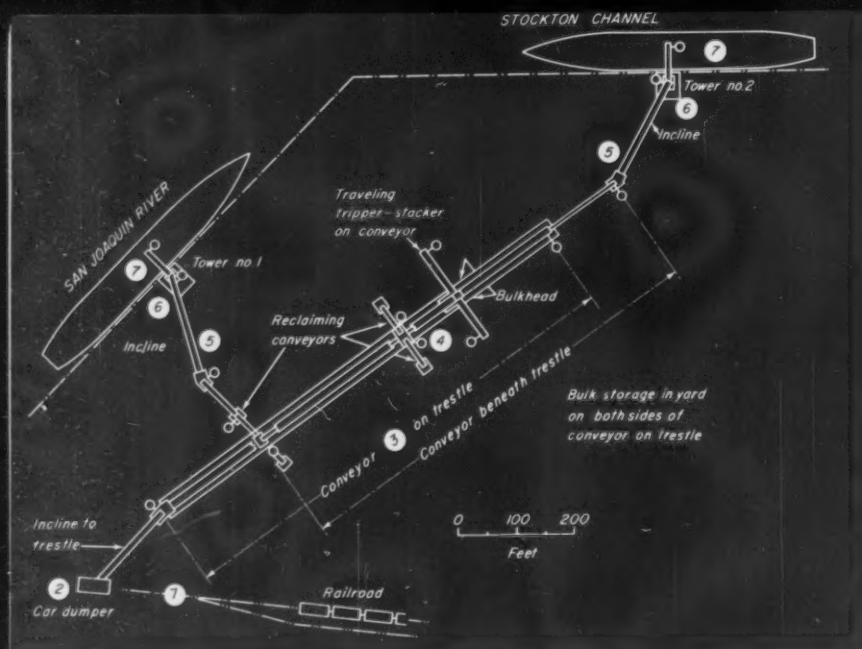
- Don't procrastinate, hoping to get a 1962 model in 1960. Get busy now and satisfy the need. Otherwise you might become a panic buyer.

- Don't let the purchasing agent become a purchasing autocrat, especially when he is dealing with highly technical, specially engineered equipment. Permit material handling engineers to play a big part in selecting this type of equipment.

- Don't peddle blue-prints.

- Let the manufacturer who designed the system build it.

Honestly now, how much do YOU add to the cost of material handling equipment? ♦ ♦



**1** A pair of motorized car movers haul ore freight cars to and from a rotary dumper. The movers handle  $7\frac{1}{2}$  railroad cars an hour.

## Handling System Lures Ships

by Scholer Bangs, Western Editor

**S**HIPS GO OUT of their way to use the Port of Stockton, Calif. The material handling system is so good that they sail 80 miles inland, bypassing other ports on the way. Stockton can load more than 21,000 tons in 24 hours, a job that takes three days at other West Coast ports. This more than offsets the 8-hour journey empty, past San Francisco docks, up the San Joaquin River, and the 8-hour return trip, loaded with ore.

"We have the fastest, lowest-cost bulk handling operation on the Pacific Coast," says Leo J. Goodwin, general manager of the Stockton Bulk Terminal Co.

Great advantage of the handling system: efficient stockpiling which frees equipment, freight cars, and ships. The flow of ore is uninterrupted and everyone profits.

- The terminal stockpiles well ahead of loading commitments; never gets caught short.

- The continuous flow all but eliminates dock workers' having to wait for work. The semiautomatic system saves manpower.

- Terminal operators can give precise docking times to mine operators in California, Oregon, Nevada, and Utah. The mine operators then can accurately schedule railroad cars.

- Ship operators save time loading, cut down on trip time.

### How the System Works

Ore trains dump as rapidly as they arrive, ship or no ship. The dumper and main conveyor can take  $7\frac{1}{2}$  cars an hour, 60 cars a shift, and 180 a day. The main conveyor, on a 27-ft trestle, can stockpile up to 250,000 tons of ore in separate piles for different ores.

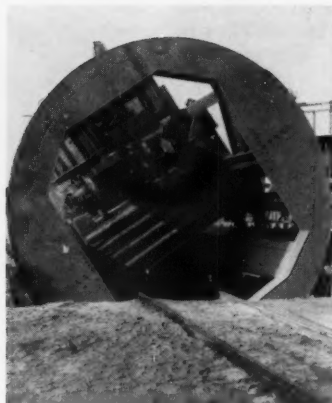
Bulldozers push stockpiled ore into underground hoppers which feed conveyors leading to the two loading towers. A reversible conveyor beneath the main con-

veyor carries ore closer to the second loading tower, can be reversed to help feed the first tower. Boom-supported conveyors on the towers dump ore into a telescoping elephant trunk tube with a power spreader to distribute ore uniformly in a ship's hold.

### Tough Conveyor Belt

New 36-inch conveyor belt is expected to handle nearly 6 million tons before replacement. The belts take tremendous punishment from the material they haul: iron ore, coal, petroleumcoke, nickel ore, barite, pyrites, potash, ammonia sulphate, alumina silicate, and magnesite clinkers.

Power comes from 14 electric motors,  $\frac{3}{4}$  to 75 hp, 60 cycles, 440 volts. Ten of them drive pulleys through gearmotors and four drive pulleymotors. The motors are fan cooled, totally enclosed to protect against abrasives. ♦ ♦



**2** Rotary dumper empties car on inclined conveyor. This system doubles output of the drop-bottom method with half the men.



**3** Inclined conveyor carries ore to the main conveyor. The 36-inch belt runs at 480 fpm along the conveyor's 810-ft length. The rail-mounted tripper-stacker, run by remote control takes ore from belt and piles it as far as 40 ft from each side of trestle, the heart of the system.



**4** As many as six bulldozers, rented as needed, shove ore from stockpiles into underground pit hoppers. Underground conveyors then carry the ore to inclined conveyors which lead to loading towers on the docks.



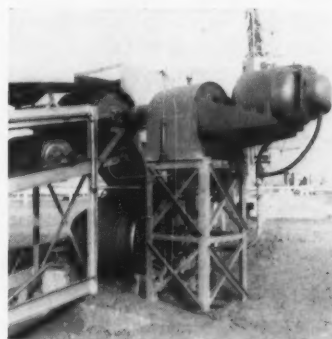
**5** Men in the loading towers control the approach conveyors and a reversing conveyor that assists in the loading. Another tower near the car dumper controls main conveyor. All stations connect by telephone.



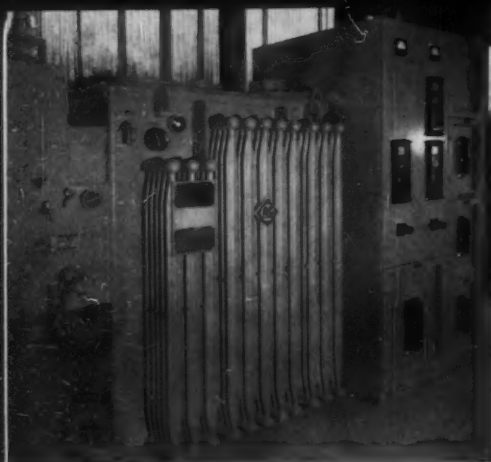
**6** A short, boom-supported conveyor dumps ore into a telescoping elephant trunk-like tube.



**7** A power spreader carried by the tube throws ore uniformly throughout cargo compartment.

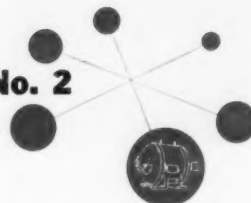


ALL MOTORS are fan cooled, totally enclosed because of the abrasive atmosphere. The many conveyors are powered by 14 electric motors, up to 75 hp in size. Pulleymotors are constructed to keep muck out of the motor area.



A LOAD CENTER substation, containing a transformer and switchgear, distributes power to motors and outlets. This type, 750 kva with switchgear below 600 volts, is economical to install and maintain, also compact.

## MHE Power Service No. 2



This article, the second in a series on power for material handling equipment, tells about electrical power reduction. Find out how it's converted to the proper levels for running the MH engineer's systems and equipment. The next article in this series will discuss various motors used to power and control conveyors.

# How to Fit Plant Power to

by V. G. Murdock and L. M. Swenson  
Industrial Systems Department  
Allis-Chalmers Manufacturing Co.

**M**ATERIAL HANDLING, the basis of mechanized industry, needs efficient, flexible, and reliable electric power. To plan the electric power for a material handling system, answer these questions:

- How's my plant laid out?
- How much load must I handle?
- How do I want to handle the load?
- How much growth must I plan for?

Then carefully select motor drives and associated electrical gear to conform with your answers. This is cheapest in the long run. Never sacrifice power plans on the altars of cost or engineering compromise. You'll pay for it anyway in lost production

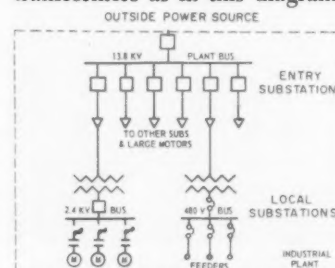
through power failures.

Alternating current motors drive most equipment. These motors may be 3-phase or single-phase. But you also may use direct current motors to get finer speed control than economically possible with AC motors. (DC motors get power from motor-generator sets or static power units such as silicon rectifiers). The power distribution system, however, doesn't care which type of motor you use; each represents just another load.

### Voltage Stepdown

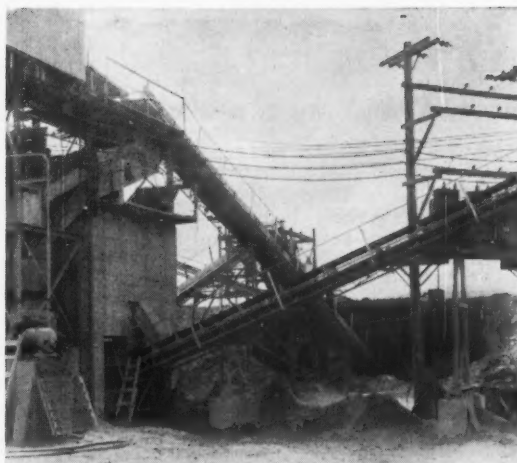
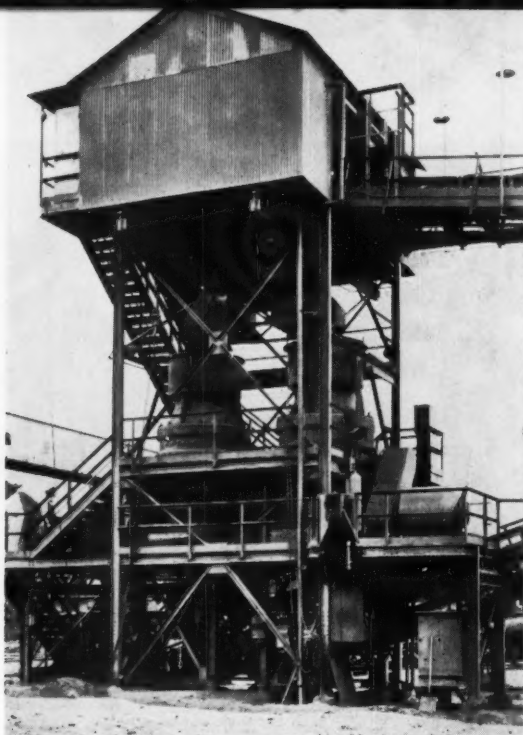
Power entering the plant must first be lowered in voltage to suit material handling equipment (conveyor motors, hoist motors, battery chargers). If

you buy power, it probably comes in at 13.2 kilovolts or higher. This can vary, however, depending on what's available in your area or on the total plant load you anticipate. Plants sometimes generate their own power. Even so, the voltage usually must be stepped down through transformers as in this diagram.



The power line into the plant ends in a main power substa-





**TRANSFORMERS** reduce power for use in load areas. Three single-phase transformers (at right of top photo behind inclined conveyor) take power from high voltage feeders. This power is then reduced to a suitable level for the crushing and screening tower (left). Consider the tower as an electrical load center with several different motors in a relatively small area.

## Handling Requirements

tion. Here transformers connect to the line through circuit breakers for large operations and through fused disconnect (knife) switches for small operations. What is the right size power transformer? You can determine that through these considerations:

- Demand factor of the plant. (The ratio of the maximum demand to the total connected load of a system).
- Power factor of the load. (This is a voltage-current relation).
- Total electrical load connected to the system.

Power transformers are usually 3-phase (connected to a 3-wire system, possibly with a fourth wire as a ground). This is because 3-phase transformers

cost less than a bank of single-phase transformers, and they are very reliable. However, you sometimes still find three single-phase power transformers connected in a 3-phase bank (and maybe a fourth one in reserve for emergencies). An important reason for the popularity of 3-phase power transformers is:

### Relative Cost

One three-phase transformer . . .	\$1.00
Three single-phase transformers . .	1.15
Four single-phase transformers . .	1.53

Power transformers are usually connected delta-Y or delta-delta. Sometimes there's a Y-Y connection with a delta tertiary

winding. Or a distribution transformer bank connected in delta to serve as a tertiary. This is for the third harmonic current, undesirable because it circulates but doesn't add to usefulness of the transformer.

Grounding is important because it stabilizes the neutral side, thus preventing overvoltages sometimes found in ungrounded systems. With a delta-Y connection, ground the neutral point of the Y either solidly or through a resistor. Since a resistor restricts the flow of current to the ground, it limits a ground fault current (leak) to a value less than found in a solidly grounded system. With a delta-

**Why a 440-volt motor? See chart on next page. →**

## Why a 440 volt motor?

RELATIVE COSTS of motors and controls (right photo) show it's cheaper (per horsepower) to supply 440 volts to motors below 200 horsepower. This is significant because most material handling motors fall into this category. Dollar amounts are for comparison only.

## Plant Power

delta transformer, you can find a neutral point for grounding by connecting a grounding transformer (zig-zag) to the secondary windings of the transformer.

### Voltage Selection is Important

Usually, power is distributed from the transformer's secondary to the load areas at 2,400 or 4,160 volts. (Practices set by the electrical industry).

Voltage is important because it determines the amount of current that will be drawn for a given load. This largely determines the cost of cables and distribution equipment. The combined cost of motors, controls, and substation in the lower horsepower ratings is less at 440 volts than the cost of motors and control at higher voltages. And, since material handling systems generally require motors rated 200 hp or less, 440 volts is usually supplied. (See chart on this page.)

Most of the motors used in these systems are 3-phase squirrel cage induction types, selected according to features in the table in next column.

Locked rotor torque is starting torque. Breakdown torque is maximum torque. Locked rotor

current is the amount of current taken from the line when the motor starts. Slip is the percent lag behind synchronous RPMs.

### Cage Motor Characteristics (½ to 200 hp)

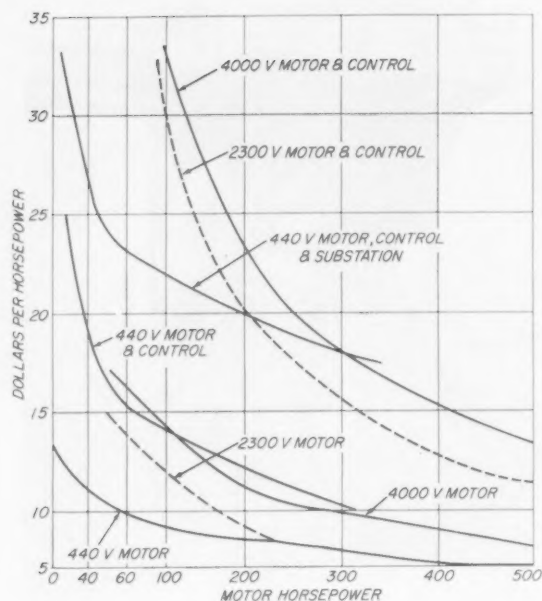
NEMA design	Locked rotor torque	Break-down torque	Locked rotor current	Slip at rated load
B	Normal	High	Low	Under 5%*
C	High	Normal	Low	Under 5%
D	High	High	Low	5% or more

(\*Design B motors with 10 or more poles may have slip slightly greater than 5%).

(Types of enclosures available: open, drip-proof, splash-proof, semi-guarded, guarded, drip-proof fully guarded, open externally ventilated, open pipe-ventilated, weather-protected Types I and II, totally-enclosed, totally-enclosed non-ventilated, totally-enclosed fan-cooled, explosion-proof, dust-ignition-proof, totally-enclosed pipe-ventilated, totally-enclosed water-air-cooled, totally-enclosed air-to-air-cooled, and totally-enclosed fan-cooled guarded).

### Load Center Substation

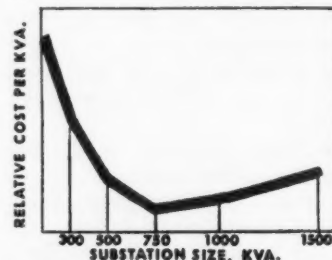
Power for these motors generally comes from a load center substation (LCS). This is a transformer with low voltage switchgear below 600 volts. The LCS takes the distribution voltage of 2,400, 4,160, or 13,800



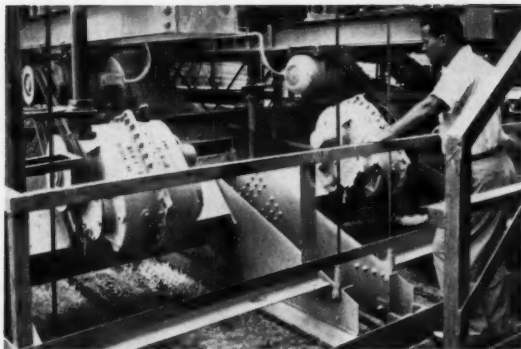
and steps it down to 480 volts. The switchgear (circuit breakers and relaying equipment) provides feeder circuits for the motors and also protects the feeders from overloads and short circuits.

It isn't economical to transmit 480 volts over long distance. With an LCS, power flows to a concentrated area at high voltages. This means lower current and savings because of smaller cables and distribution equipment. You reduce the high voltage to a more usable 440 at the load area. Unit construction is an advantage of the LCS: move it easily wherever it's needed.

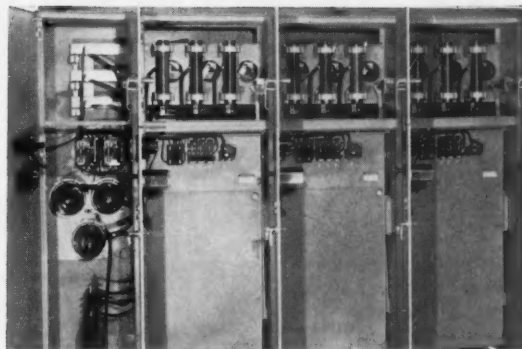
The LCS may vary from 112 to 2,000 kilovolt-amperes (kva). But those rated at 750 and 1,000 kva cost less per kva than others.



Here's why. Below 750 kva, the LCS transformer costs more



**LEAVE ROOM** for expansion (top photo) when planning or revising your electrical distribution system. Power requirements for these vibrating screens or for conveyors may not be large individually. But the overall effect becomes important as new facilities are added.



**MOTOR CONTROL** centers are useful and necessary for supplying the power to electrical drives. This is a front view with the doors open. Incoming line cubicle is at the left. Mounted on outside of flush doors are operating controls, meters, and indicating lamps.

relative to the output. Above 1,000 kva, more expensive switchgear is necessary to protect against line accidents. The same problem exists for stations above 1,000 kva which feed motor control centers. Such stations take more expensive current-limiting fuses.

### Voltage Drop

Keep voltage drop within certain limits. For example, 3-phase induction motors nameplate-rated from 220 to 600 volts should operate between  $-4\%$  and  $+9\%$  of the nameplate voltage. For motors rated 2,300 to 6,600 volts, the range is  $-2\%$  to  $+8\%$ . If voltages range from  $-10\%$  to  $+10\%$ , 3-phase induction motors will run, but not necessarily in accordance with standard guarantees. These figures also apply, in general, to synchronous motors.

If the voltage drops below these limits, the motors may run inefficiently and possibly be damaged. This is due to the high current that accompanies the voltage drop. Low voltage also reduces torque output of motors, making them hard to start or fail to accelerate machines to normal speed.

When voltage is low to begin with, the voltage may drop even more because of a high inrush of current when the motor starts.

This may cause motor starters on the line to drop open, stopping the motor. Or it may cause the starter contactor to chatter, reducing its life.

You may be able to cure low voltage by selecting the proper cable size. However, you may also have to use reduced voltage starters for motors. These limit the inrush of current on starting, reducing the voltage drop.

### Standard Voltages

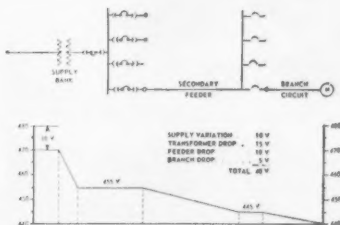
Because an unloaded transformer has a higher voltage than a loaded transformer and because of voltage drops in the feeder circuits, this happens: a 4,160-volt system becomes a 4,000-volt system when you connect a load. Similarly, a 2,400-volt system becomes 2,300; and a 480-volt system, 440 volts.

Nominal System	Generator & Transformer	Motor & Control
120/208Y	120/208Y	110-208
*240	240	220
480	480	440
*600	600	550
2400	2400	2300
4160	4160	4000
*6900	6900	6600
13800	13800	13200

(Asterisks show voltages that are becoming non-standard).

Here's the reason for the variation, using a 480-volt system as an example. Assuming reasonably that there may be a 10-volt variation in the supply, the volt-

age on the line from the transformer then becomes 470 at no load. When the motor is connected, a 15-volt drop is expected because of transformer impedance. There also may be a 10-volt drop on the feeder and a 5-volt drop on a branch circuit feeder. These drops add up to 40, making the voltage 440 at the motor.



### Trends

The march is toward higher voltages, more efficient, lower overall equipment cost. New types of insulation, silicon rubber or epoxy covered, make it possible to use open type motors where an enclosed motor used to be required. Savings can be considerable. Metallic and crystal rectifiers are replacing mercury arc rectifiers. They make it practical to furnish direct current to motors requiring fine speed adjustment. They also permit synchronous motor field excitation. ♦ ♦





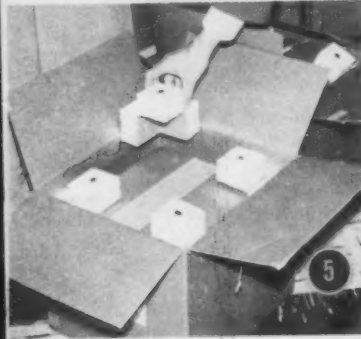
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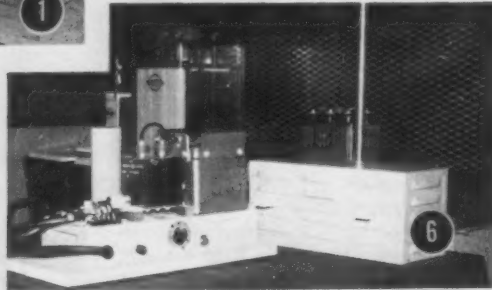
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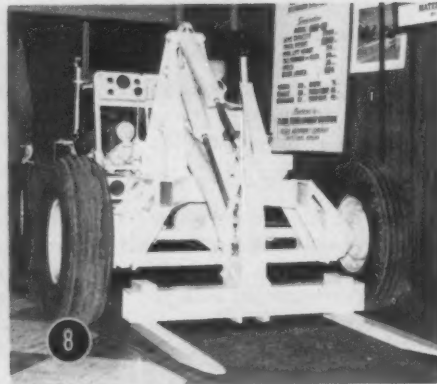
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7



8



2 or 3 TIMES

BOSTITCH



9

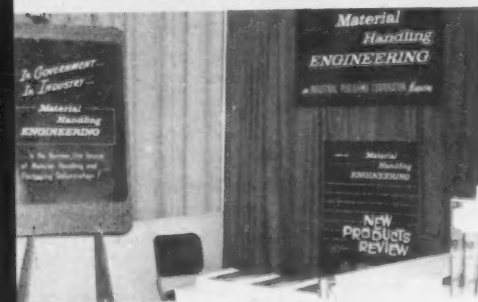


10



**Jiffy**  
PADED SHIPPING BAG

NO PRICE INCREASE

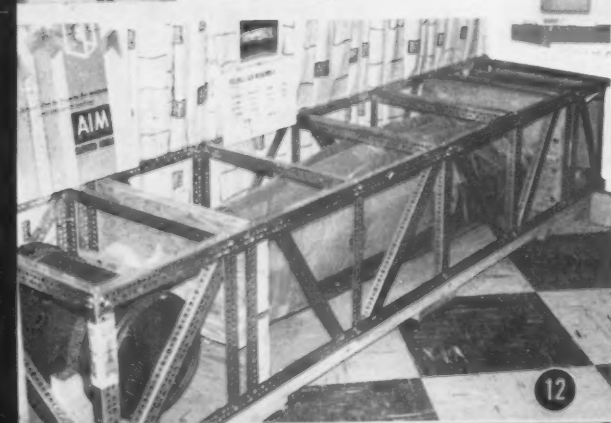


Material Handling ENGINEERING

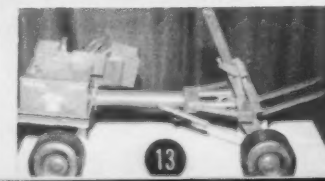
NEW PRODUCTS REVIEW



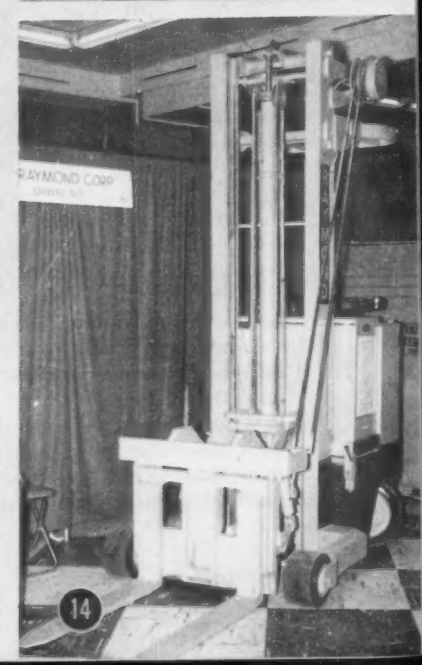
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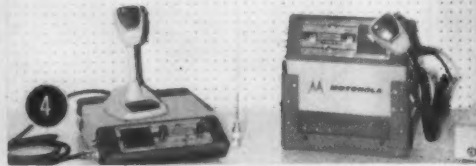
14

RAYMOND CORP

PAK-RAPID

# MATERIALS HANDLING... SECURITY...

LOOK TO **MOTOROLA** FOR THE  
IN  
• 2-WAY RADIO  
• RADIO PAGING  
• CLOSED CIRCUIT TV



4



5



## What Industry Showed the Military

**F**OR the first time this year an exposition, accompanied the Joint Military-Industry Packaging and Handling Symposium. People at the Symposium were able to see, touch and examine many of the products talked about. The symposium was sponsored by the Air Force, the show by the National Security Industrial Association.

NSIA had asked exhibitors to bring products which were really new and applicable to military handling and packaging. Most of the exhibited products had obvious industry uses too, illustrating again similarities between military and industrial logistics. (See photos at left.)

It was no surprise that containerization equipment drew much interest. Unitized shipments will be part of any successful shipping method of the future.

Rigid and collapsible multi-wall steel shipping containers were introduced by the Champion Co. Their extra-strong construction was important, but the big feature was a load protection device called the Flexa-Skid. (1) It rests on shock-proof rubber shear mountings which, according to Champion, can be adjusted to the weight of your shipment and to the protection factor required.

"Stencilmation" (2) an automatic stencil cutting machine, is so new that the manufacturer, Marsh Stencil Machine Co. had to show the prototype. In fact, it was displayed to discover uses for it. The machine cuts stencils as a by-product of any automatic office data processing system. In Marsh's demonstration it

was connected to a Frieden Writer.

Another attention-getting stenciling device was a stencil roller (9) shown by Bostitch. It rolls ink on quickly and neatly. A reservoir holds enough fast drying ink to last all day.

You can tailor vehicle running gear to loads carried with Aerol's Integrated Wheel Suspension System. (3). It adapts to all military mobile ground support equipment and adjusts to suit loads of 800 to 14,000 pounds. The side mounted unit allows you to straddle the load with the bed of the vehicle at ground level or at any height above the ground.

Transistorized radios specifically designed for material handling were introduced by Motorola Communications & Electronics, Inc. (4). Certainly one of the smallest industrial radios ever developed, the Dispatcher uses little current but delivers great speaker output. It requires as little as  $\frac{1}{2}$  the current needed by non-transistorized models.

Corner cushioning pads called Hardi-Pads are unique polyurethane foam pads reinforced with pieces of rubber tubing. (5). They were demonstrated in a pack which used 8 Hardi-Pads. They give protection from shocks in any direction. Manufacturer is Hardigg Industries.

A 12-volt battery charger, the Auto Reg, plugs into any standard, 15-ampere, 60 cycle, 115 volt outlet. It was shown by C & D Batteries, Inc. (6). It charges any 6-cell lead-acid, hand truck battery with a capacity up to 660 A.H., in 16 hours or less. Heart of the Auto Reg

is a sealed silicon rectifying element that needs no adjustments during the life of the charger. You can mount the charger permanently near a wall outlet, or on the truck for charging at any wall outlet.

The Air Force sponsored the Symposium, but the Marines established a beach head in the show. Metal Edge Industries displayed a shipping-storage pack (7) developed specifically for the Marine Corps. It should find wide application in industry. The pack consists of a nailed wooden framework, containing different size metal-edge storage boxes. Six packs stack on a 36" x 40" pallet. The Marines will use them as field storage warehouses with all parts catalogued before shipment. In the field, wooden covers are removed and the packs are ready for use. Simply pull out a metal-edge drawer to reach any part required.

The other Marine representative was a helicopter transportable aluminum rough terrain fork truck. Clark Equipment Co. developed it. The Marines aren't saying how they intend using them, but visitors could see the value of the lightweight trucks on beaches. The one displayed (8) weighs only 2,930 pounds but can lift 3,000 pounds.

Some time ago, the zipper principle found its way into packaging on corrugated fibreboard boxes. Now, it is the big feature of Jiffy Mfg. Co.'s new Clupak shipping bags. (10). When you receive an item in a Jiffy bag pull a tape and zip, the package is open.

Need a fork truck for hazardous areas? Allis-Chalmers has an

## Military-Industry Show Report . . .

answer in its Safety Diesel (11), currently being tested by the Savannah Ordnance Depot. The 4000-pound truck displayed was equipped with non-static tires, ground straps, bronze mast rollers and non-ferrous fan blades. It featured a tri-lift mast.

Allis Chalmers also gave visitors a look at fuel cell power, a candidate for industrial truck power of the future. An 8-minute movie showed a fuel cell powered farm tractor put through its paces. If it can be done with farm tractors, why not industrial trucks?

Slotted angle framing is well established as a rack material. Acme Steel Co. idea men

see it as much more than that. It makes an ideal crate for expensive, easily damaged items. Propellers, for example (12). With AIM Brand Slotted Angle, you have great flexibility in container design. Shipments arrive rigid, tight, completely protected, and ready for opening, or stacking.

Still in the experimental stages is the Sandpiper (13) shown by Berger Research & Engineering Corp. It is a sectionalized vehicle with: (a) a front pod, made up of a simple rigid frame upon which is mounted the left mechanism and pivoting front wheel mounts; (b) a torsion bar center section which permits any

wheel to move 14 inches up or down while the other three remain level; (c) a rear pod consisting of the power package, the operator's cockpit and the steering mechanism.

Lift trucks continue to stack higher in narrower aisles. Raymond Corp. showed the military its model E4RT 4000-pound capacity truck. (14) It can right-angle stack 40" x 48" pallet loads as high as 20 feet, from seven-foot aisles. It operates with either lead acid or nickel alkaline 24-volt batteries. A remote control device enables the operator to step onto a safety pallet on the forks and raise himself to any working height.

## What Industry Told the Military

**R**APID CHANGE marks packaging and handling nowadays. Speakers emphasized this at the Fifth Military-Industry Packaging and Materials Handling Symposium. They talked about innovations, new methods, new materials, and new approaches. Topics ranged from visions of the distant future to the future that already is upon us. Here are some highlights.

### A Look Ahead

The most significant advances in material handling will come from changed management ideas, particularly about distribution. So said E. Ralph Sims Jr., consulting industrial engineer. (Sims is MHE's Consulting Engineering Editor.) Elimination of inventory through better management and scheduling will change our material handling. Low cost power, perhaps atomic, solar, or some variety as yet unknown, will permit economical use of transporting devices, such as ducted fan vehicles or pilotless aircraft, he said.

Sims sees development of a

magnetic field conveyor. A product will ride a beamed magnetic field with no other supports. It might be possible, he said, literally to fly products through the air. What man can conceive, concludes Sims, man can do.

### Packaging for the Moon

Kenneth Brown, Space Technology Laboratories Inc., told visitors how he thought goods would have to be packaged for a trip to the moon. New materials will have to be used. They will need a low force-to-energy ratio to absorb more shock than the materials we have now. Here are some of the problems:

- Shock. During takeoff, the package will have to take loads as high as 12 g. On second, third, and fourth stages, however, the load may jump to 25 or 30 g.

- Vibration. Because of outer space vacuum, the only damping factor for vibration will be the vehicle structure.

- Cosmic radiation. This may give most trouble. We either will have to steer a ship around cos-



mic ray concentrations or shield the goods, which adds weight.

- Ultraviolet radiation. Harms plastic, rubber, polystyrene, and Teflon. Shielding adds weight.

- Vacuum. Lack of air as a lubricant makes smooth-surfaced metals stick together. This could be disastrous to moving metal parts.

- Landing. Shock could be considerable, even if there is a 30-ft layer of dust on the moon, according to one theory. Experiments show that decreased pressure and lack of air, expected on the moon, cause dust to act like solid rock.

- Food packaging. A vacuum, lacking moisture, will ruin food or change its taste.

#### **Packaging—Neglected Stepchild**

Management and industry often give packaging little attention, said **James R. Bright**, associate professor, **Harvard Graduate School of Business Administration**. But, he said, managers someday will awake to the importance of packaging. Then industry will start a mad search for packaging executives. The result, said Bright, will be too many firms competing for too few real experts.

Tomorrow's packaging executive will have to be more than a technician, said Bright. He will be a manager, combining technology and business. He will have a keen knowledge of new materials and rapidly changing methods. Because packaging is becoming mechanized, he will be machinery-oriented rather than personnel-oriented.

#### **Really Big Unitizing**

We must go a step beyond containerization when we think of cargo handling, said **John R. Immer**, president, **Work Saving International**. He holds that idle handling equipment is wasteful.

Immer said the logical development is something larger, a loading frame. It's a combination of standard containers in a frame, making one large block of cargo. It would measure perhaps 40 x 80 x 40 ft, weigh about

1,000 to 1,500 tons. You build it at the dock before the ship arrives. A loading frame removed from the ship is broken down at the dock after the ship is loaded and has departed. The ship, said Immer, does what it should, travel.

#### **Fantastic Progress in Packaging Aids**

Suspension packaging reduces shipping costs, damage, and it even may cut shipping time, according to **E. M. Rzepecki**, technical manager, **Heavy Duty Packing Tapes**, **Minnesota, Mining and Manufacturing Co.** He said suspension packaging is useful for fragile items hard to support. Examples: aircraft control surfaces, such as wings, elevators, and stabilizers.

They suspend by filament reinforced pressure sensitive tape anchored to the sides of an open crate. Strips of nailable steel strapping hold the tape to the sides of the crate. Rzepecki said the system cuts material and labor costs 50%, reduces weight, volume of packaging material, and damage.

Rzepecki mentioned other new packaging systems and materials: reinforced plastics for light strong boxes; films you can see through for 100% inspection at all times; and use of reinforced pressure sensitive tapes in closing cartons mechanically, palletizing cartons, and keeping loads from shifting in rail cars.

#### **Speeding Up Order Picking**

Order picking is slow compared with other distribution processes, said **Dr. Joseph Harrington Jr.**, **The Arthur D. Little Co.** He said it still involves too much touch labor and clerical work. Harrington feels a simple reliable low-cost system should include these ideas:

- A warehouse is not dead storage but an area through which goods move and are regrouped.

- A person is not an ideal order picker. Therefore, a mechanized order picker should not be just a mechanical man.

- Mechanized order picking must be compatible with manual order picking because you may never want to mechanize certain slow moving items.

- You may have to change the product or package to suit a mechanized system.

- A good system is reliable and accurate.

- Automatic bins must store products efficiently. Machinery must take little space.

- Order picking should be integral with manufacturing, not tacked on as an afterthought.

#### **The Picture on Standards**

You know what we did with pallet standards, said **G. F. Hussey Jr.**, managing director, **The American Standards Association**. He said it took a committee of 30 national trade associations, professional societies, and government agencies, plus 33 individual experts as members at-large to come up with eight rectangular and three square pallets. There also is a series of areagrams (charts) for standard size carriers.

Hussey said the association is working on:

- 1—Three container projects: oil cans ranging from 1-pt size to 5-lb grease cans; 10 standards for drums and pails; a proposal on freight containers, from pallet size to demountable truck body types.

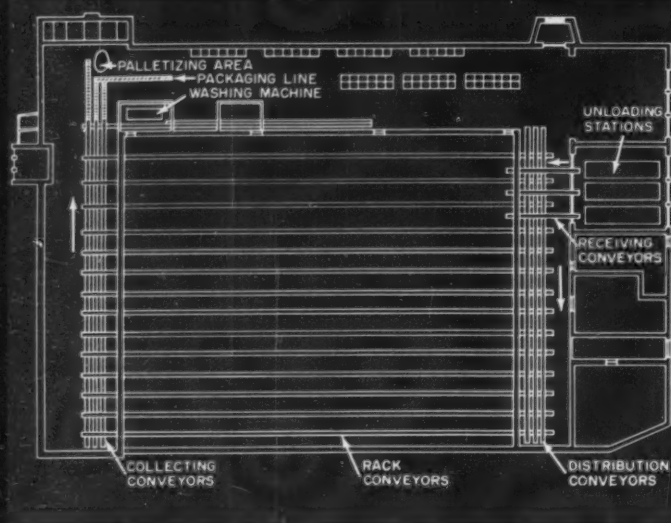
- 2—Conveyor terms and definitions. Big job is to clear up confusion in terms.

- 3—Safety codes for powered industrial trucks, fork trucks, tractors, mobile cranes, derricks, hoists, conveyors, elevators, and related equipment.

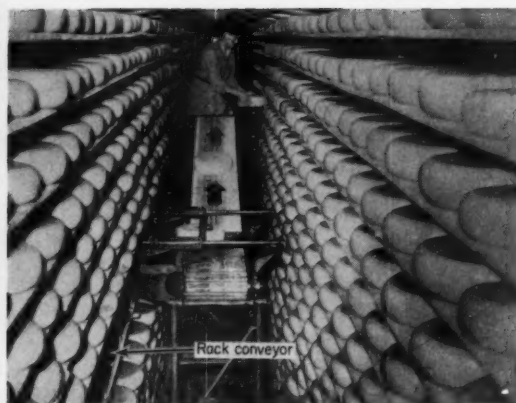
- 4—First conference has been held on standards for data processing machines.

- 5—ASA is seeking a replacement sponsor (the original bowed out) for standards on pictorial marking to indicate handling instructions. The purpose is for pictures to suggest Fragile, Handle With Care, Stow Away From Heat, and others on packages. This is getting international study. ♦ ♦





CONVEYORS permit Dutch firm to handle 350 tons of cheese a week. American engineers designed the layout first, then built a one-story air conditioned building.



A MOBILE conveyor sweeps cheeses from a rack conveyor, runs them to a helper who stores them by hand. Arrow points to rack conveyor, hidden by the shelves.

### Automatic Cheese Handling on:

## No-Taste, No-Smell Conveyor Belts

**T**HAT GOUDA cheese on your dining room table met up with stainless steel before you plunged a knife through the wax coating. Chances are it rode a stainless steel belt conveyor in a warehouse.

It did if it came from Messers. De Producent of Gouda, Holland, a sales organization for a cheese manufacturing cooperative. The firm used to use several widely separated warehouses. Result: inefficiency and improper care of the cheese. So the company, now handling 40 million pounds of cheese a year, decided to go automatic under one roof.

### An Efficient Layout

An American firm, Sandvik Steel Inc., Fair Lawn, N. J., engineered and installed a conveyor system 5,000 ft long. The engineers chose stainless steel belts because they are sanitary, don't retain odors, don't corrode, and are easily cleaned.

The system can handle up to

90 tons an hour. Cheese includes the flat Goudas, weighing up to 30 lb each, measuring up to 17 inches across; also loaf-shaped varieties, and the ball-shaped Edammer. Belts travel at nearly 100 fpm. The warehouse can store as much as 3½ million pounds of cheese at one time in 45 miles of rack space.

The storage room in the one-story air conditioned building measures 167 x 218 ft, has 28 parallel rows of racks. Every other row has a built-in conveyor in place of some shelves at 8½ ft from the floor. That's the heart of the system. They also use conveyors to carry cheese to the rack conveyors, other conveyors from storage to shipping. The only hand work is laying individual cheeses on the racks or removing them.

### A Special Unloader

An independent mobile conveyor moves up and down the aisles, adjustable to all rack heights. A deflector arm shunts

cheeses from the rack conveyors onto this device. A short inclined conveyor then carries the cheeses to a platform at the level of the shelf to be loaded. An attendant places cheeses on the shelf.

A dispatcher in shipping controls the operation so no phase gets ahead of another. He coordinates speed of the conveyor network, by phone, with the dispatcher at receiving, who controls routing of the cheeses. The shipping dispatcher orders cheese for shipment, directing employees in the warehouse by loudspeaker. They pull cheese from the racks and place them on the rack conveyors. They tag the first cheese of each order to keep lots separated.

The conveyor belts are 16 inches wide and 0.32 inches thick. Ends butt together, riveted to a common understrap. A standard belt stretcher pulls the ends together. The three incoming and outgoing conveyors have a capacity of 15 tons an hour. ♦ ♦



# Can Renting Cut Your Maintenance Costs?

Here's how you can find out for yourself . . .

by Herbert A. Warren

**H**OW WOULD YOU like to take all your material handling equipment problems, tie them together, and drop them on somebody else's doorstep?

That's the kind of offer rental companies are making; one payment, they say, will get you equipment, maintenance, repair, and replacement.

This package is known as long-term renting, to distinguish it from leasing. From tax and legal viewpoints, leasing and renting are the same. But from a practical viewpoint, long-term renting means that the renting company will assume responsibility for all maintenance and service.

Let's look at the long-term rental plan. What are its characteristics?

1. The renting company provides maintenance, service, replacement, and insurance.
2. The renting company sets up these services in a program to suit your specific operation.
3. Rental rates are set up by formulas and standards developed on the basis of experience with each particular kind of equipment. The renting company must know how much it costs to maintain and repair each kind of equipment, what its value will be at the end of the rental period, etc.
4. The renting company makes a thorough survey of the cus-

## COMPARE THE COSTS

### OWNING

#### EQUIPMENT

Include cost of equipment and accessories (new or leaseback), transportation charges, sales taxes, etc., (less residual at end of term) . . . \$

#### COST OF CAPITAL

Include all interest (or financing charges) on capital tied up in equipment . . . \$

#### MAINTENANCE

If you maintain a repair shop, include all direct and indirect shop costs such as payroll costs, fringe benefits, rent, light, heat and power, depreciation of shop equipment, tools, insurance, record keeping, etc. Also include all outside repair service, tire replacement, purchases of parts, etc. . . . \$

If you do not have a repair shop, include charges for outside service calls, parts, preventive maintenance, emergency calls, overhauls, tire replacement, painting, steam cleaning, etc. . . . \$

NOTE: All costs should be adjusted to current price levels.

#### INSURANCE

Include fire and theft . . . \$

#### TAXES

Include personal property, excise, use, etc. . . . \$

#### OTHER OVERHEAD COSTS

Purchasing Department: Include time costs of interviewing salesmen, evaluating equipment, issuing purchase orders, record keeping, etc. . . \$

Receiving Department: Include costs of checking replacement parts received, preparing receiving reports, following up material, record keeping, etc. . . . \$

Stores Expense: Cost of receiving parts and supplies, stocking and issuing of parts, physical inventorying, record keeping, etc. . . . \$

Accounting Department: Cost of supervising the materials handling operation, the purchase of equipment, etc. . . . \$

Management Time: Cost of supervising the materials handling operation, the purchase of equipment, etc. . . . \$

#### LOSSES TO DOWNTIME

Include losses to idle personnel, production stoppages, shipping delays, costs of renting substitute equipment on short term, cost of owning and maintaining stand-by equipment. . . . \$

#### LOSSES TO RISING COSTS

Cover estimated increases in price levels for labor, parts and overhead. \$

#### OBSOLESCENCE

Cover both equipment and parts . . . \$

#### PROFITS LOST

Estimate profits lost by capital tied up in equipment . . . \$

#### OTHER COSTS

Include all other costs including lost manhours (caused by illness, training, etc.) losses to pilferage of parts and tools, etc. . . . \$

#### TOTAL PROJECTED COST OF OWNERSHIP

\$

### RENTING

#### TOTAL COST OF RENTING

This amount to be supplied by rental company after survey is completed. . . . \$

#### SAVINGS BY RENTING

\$

## Renting

tomer's handling operation before setting up rental rates for his particular operation.

5. The renting company will assist the customer in setting up an efficient handling system and will provide the proper equipment for the system.

6. The renting company will make provisions to buy the customer's present equipment at market value. This equipment will be replaced by new rented equipment. Sometimes the renting company will buy the equipment, rebuild it, and rent it back to the customer.

7. Whenever possible, rental rates are quoted on a one-price basis. That is, the renting company will quote a firm price for the term of the rental equipment. This is based on a stable schedule of hours of use. When work hours vary, an overtime charge is usually written into the contract.

8. Contracts are written as true rental plans from the viewpoint of the Internal Revenue Department. That is, they follow the guides set forth in Revenue Ruling 55-540, and those which are based on court decisions.

### Rental Advantages

A rental plan which is properly set up has certain advantages:

1. You have no maintenance worries. You are rid of the problems of getting quality repair work, of hiring competent mechanics, of stocking spare parts, of keeping stock and service records. And plant space used for servicing and inventory becomes available for more profitable use.

2. You get uninterrupted use of equipment. If a rented machine breaks down, the renting company will replace it. You avoid delays in production, eliminate backlogging of shipping, and prevent lost work time of personnel.

3. You use only the amount of equipment you need for average requirements. You can rent equipment for seasonal peaks and emergencies at special rates. This saves you the expense of surplus equipment during slack periods: depreciation, insurance, maintenance, storage, etc.

4. You free capital for productive use instead of tying it up in equipment. This conversion of fixed assets into working capital will improve your company's cash flow and credit rating.

5. When you own equipment, you have hidden and unrecorded costs which are often overlooked. They affect your efficiency. These costs include equipment downtime, obsolescence, pilferage, management time, and clerical labor.

6. A one-price rental contract over a period of years protects you against spiraling costs of equipment, labor, and parts.

7. You can prepare your budget better. With a one-price rental

contract you know your material handling equipment costs in advance and can budget accordingly.

8. Tax benefits. You can deduct rental payments in a properly executed contract.

9. Better production. An operator using modern equipment, properly maintained, will work better and produce at a higher rate.

### Comparing Costs

At first glance, the advantages mentioned look worthwhile. The question is, will rental cost you more or less than your current material handling operation? To make a meaningful comparison, you should:

1. Determine the number of years during which you wish to rent. (Base this on the economic life of the equipment in your operation.)

2. Determine the number of items to be replaced by new equipment or to be retained.

3. Compile handling equipment costs for enough past years to serve as a proper basis for projecting the cost of this equipment under company ownership for the same number of years during which you intend to rent.

4. Compare these final projected costs with the arrangement offered by the rental company.

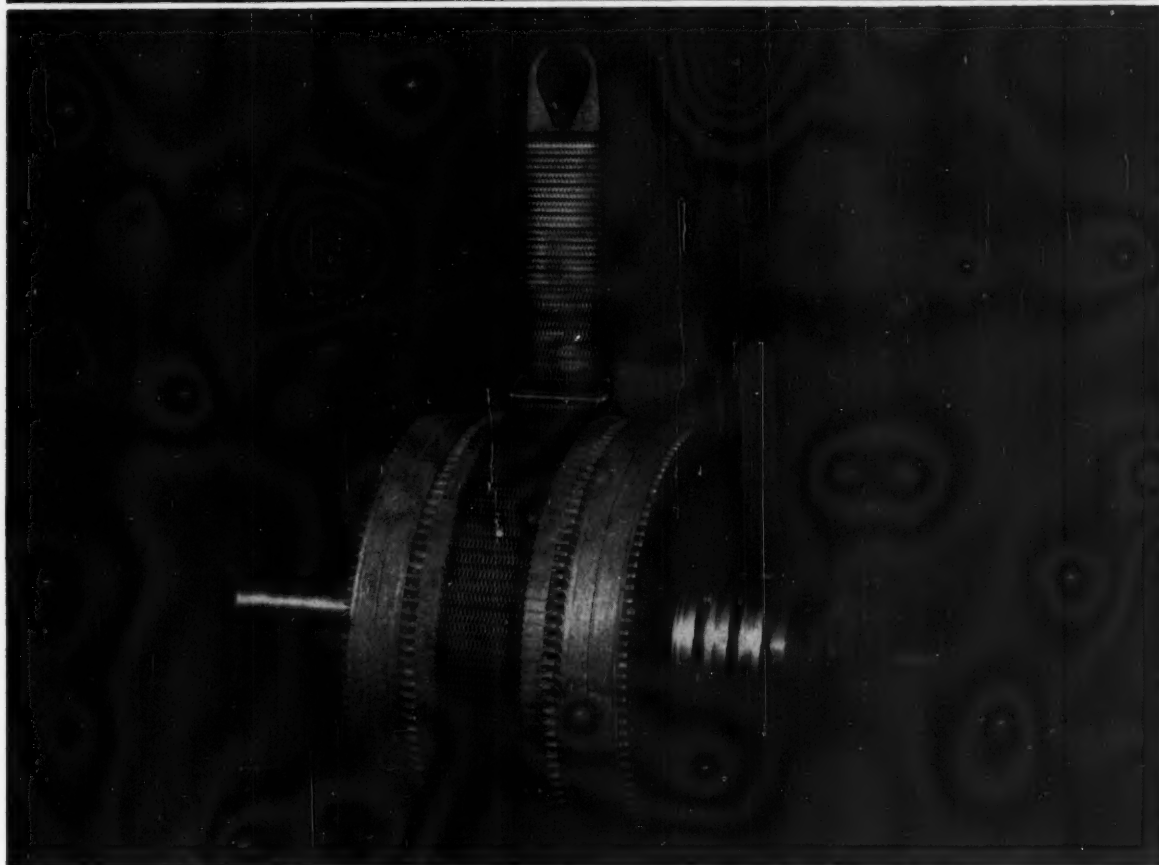
You must make a thorough analysis of your material handling program before evaluating any rental program. You must consider not only direct costs—depreciation, maintenance, interest, insurance, taxes, etc.—but also the cost of downtime, obsolescence, and other hidden items. Important: when evaluating costs of past ownership for projection into the future, remember to adjust to current price levels.

After making an analysis of your material handling system, the rental company will give you their cost of supplying the equipment and maintenance. The cost comparison chart on page 73 will give you specific cost factors for comparison. ♦ ♦



Herbert A. Warren has had long and varied experience in the field of material handling equipment renting. He is general manager of Clark Rental Corp., a subsidiary of Clark Equipment Co. Previously Warren was an officer and director of Lift Truck Rental Corp. and other material handling equipment distributor organizations. A certified public accountant, he was a partner in the accounting firm of Rugg and Warren for several years.

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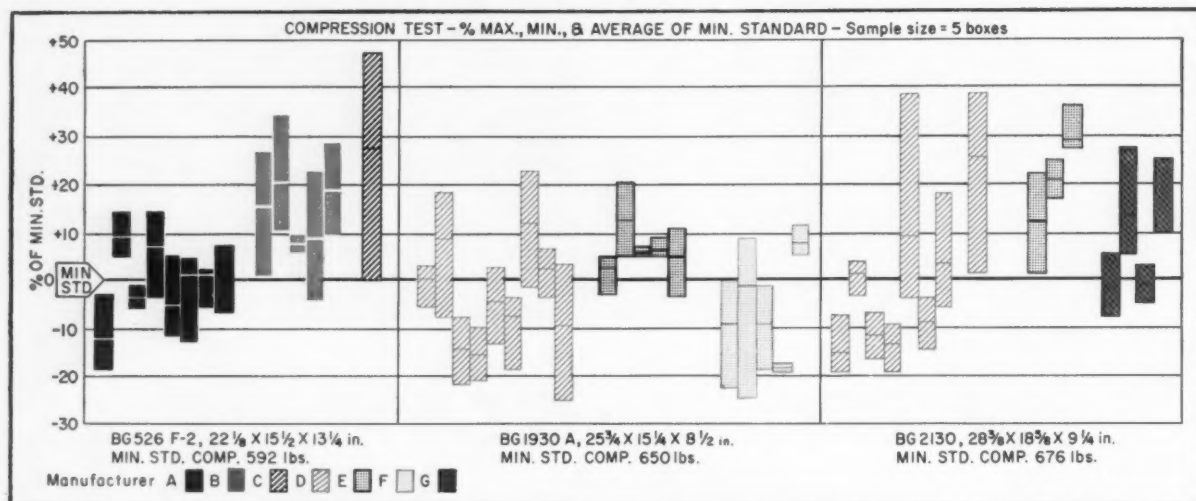


# ***PACKAGING AND***

# ***SHIPPING SECTION***

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A COMPRESSION testing program: shows an apparent lack of control in producing boxes to meet users' performance standards. Each bar represents a lot of 5 boxes. Average of the 5 is shown by a line through the bar. Each group of bars represents boxes from a

single manufacturer. Three sizes of box were used, all from 140-lb test board. Minimum standard compressions of 592, 650, and 676 were used. Values for the boxes are expressed as a percent of the minimum specified. All box makers used same specifications.

NEEDED:

## Better Quality Control

by E. B. Candell, supervisor of package design  
Large Lamp Department, General Electric Co.

**T**HE MORE I study boxes, the more I'm amazed at the apparent lack of manufacturing control. Furthermore, it's astounding that so many users haven't the faintest idea of what quality of performance they are getting.

Sure, they know when a box falls apart or won't fit. But do they know subquality boxes? Can they recognize and appreciate extra good quality?

I'm being critical, but I hope not unduly. Certainly, box makers should be complimented on strides they've made. They held the line on costs remarkably well. The board they make looks good. And most of them are interested in improving quality. But many problems have not been handled as they should.

Shipping containers must protect the product from damage with minimum cost for material, labor of packing, and transportation. Generally speaking, boxes

are a waste product except for market promotion through printing and display. Because I want the most efficient package and best dollar value, I make regular performance tests of boxes.

### Vital Characteristics

Performance testing involves combined weight of board, puncture test, and compression strength. These are of top importance to users.

**Combined weight of board.** When we specify, we try to make certain the board weight is right for our use, that it's practical to make. We try to get the lightest box because paper and transportation cost money. Uniformity of weight is important too. It governs base standard weights for computing shipping charges.

**Puncture resistance.** We want this value as high as practical without upsetting other values in the specifications. Puncture is a great shipping hazard. People

have tried to relate puncture tests to compression and Mullen Tests; but, as far as I know, without success.

**Compression strength.** We used to stack boxes as high as a man could handle. Now, fork lift trucks, palletizing, and 18-ft ceilings have led to higher stacks. That's why compression strength is vital. A simple rule (open to argument): the box must measure, in compression, four times the weight imposed on the bottom box of a contemplated stack. This is based on a 50% decrease from ideal due to high humidity and a 50% decrease due to fatigue of the board.

**Other important factors:** meeting the specifications on dimensions, material, quality of scores, fitness for bending, quality of printing, and absence of signs of crushed corrugations and finger lines.

### The Testing Laboratory

When I started in packaging I had to find out what were good boxes. I was helpless until we set up a simple laboratory. The purpose was to test boxes from a practical viewpoint—performance.

I was astounded to find out

we had more of a lab than some of the makers trying to sell us boxes. Does it make sense that the user should know more about the product than the manufacturer? Yet, that's sometimes true today.

Our lab is controlled at 72°F and 50% relative humidity. A recording compression machine plots the stress-deflection curve. We have a Cady tester, a GE Puncture Tester, and a paper scale. Also, there's a large cabinet in which we can subject paper to a wide range of temperature and humidity.

I recently analyzed compression tests covering three sizes of boxes tested over the past 18 months from six different makers. These are plotted on the chart. I found spreads of 20%, 30%, and 40%, using a minimum standard compression of 595, 650, and 676 lb. Are these

values what we must expect from industry? What degree of control does this represent?

We can't stand these low values. Must we upgrade to eliminate them? If so, this is costly and wasteful. On the other hand, if most box makers can turn out high test boxes in successive tests, why can't they reduce the spread shown in the chart above? Then we could downgrade a little and save money.

Another question: would the box makers be content to get their raw materials with as much variation as I found? Or do they?

**Measuring deflection.** According to ASTM specifications, an initial load of 50 lb is made before starting to measure deflection. I can't find an authority for this, but by common practice maximum compression is measured at  $\frac{1}{4}$  inch or failure, whichever occurs first. For single wall

board there is no problem because compression failure seldom exceeds  $\frac{1}{4}$ -inch deflection.

But for double wall compression, failure usually occurs at greater than  $\frac{1}{4}$ -inch deflection. If we were to increase the initial load from 50 lb to 80 or 100 lb, then the readings would resemble the single wall board readings. It makes sense that, because of greater board thickness, a higher initial load is proper for double wall board. Is there an industry standard on this? If not, can't we agree on some value?

I think box specifications should specify performance. I think box makers should measure performance, make more uniform boxes. Maybe the box makers need improved controls over their operations. As they take a greater interest in good quality, the boxes surely will improve. ♦ ♦

## BETTER QUALITY CONTROL:

# A Goal To Shoot For

by W. B. Lincoln Jr., vice president  
Research & Development  
Inland Container Corp.

**C**ERTAINLY MR. CANDALL has good grounds for some of his points. I want to assure him that an important segment of the corrugated fibre-board container industry many years ago recognized these problems.

He says that some members of the industry lack even the simplest of laboratories. Yet, for nearly 30 years our company has had a good laboratory manned by trained engineers.

It's up to the buyer to be selective and buy where he finds the most consistent performance and service at a fair price. You can always find someone who will make a poorer product and sell it for less.

I admit adequate knowledge

of what makes a good quality shipping container is thin in many places despite a considerable amount of information available. As Mr. Candell points out, ignorance of many simple fundamentals is shocking.

He correctly notes that some box makers have no technical staff to guide operations and to evaluate output. But he shouldn't be surprised that he knows more than many manufacturers. Mr. Candell is one of a knowledgeable group of users, a small portion of our industry.

I want to comment on three items he considers important.

**Combined weight of board.** Variations appear because of differences in raw material and in efficiency of fabrication. There

may be out-and-out error in the grade of materials. Also, a test sample may represent a small portion of an order run from over-strength material. Or, to give service, a manufacturer—lacking the right grade—may give rush delivery from heavier grades of material.

**Puncture resistance and compression.** To control these well you need adequate testing facilities. Control depends greatly on good, skillful fabrication, and on machines in good repair.

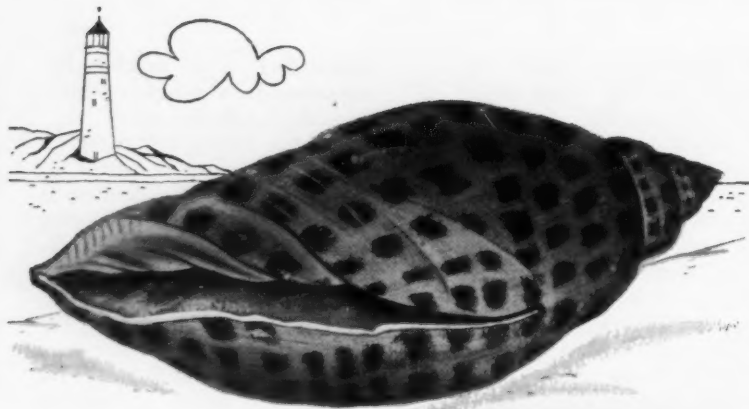
**Safety factor.** Mr. Candell mentions strength loss from high humidity and fatigue. Unfortunately, we have never found a better word than fatigue. A 50 percent decrease from ideal that he mentions includes many factors not normally considered fatigue, such as:

- Strength variation of individual containers compared with the average of the lot.

- Damage to an individual container.

- Uneven, out-of-line piling.

- Incomplete support of the

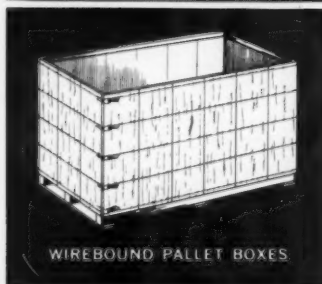
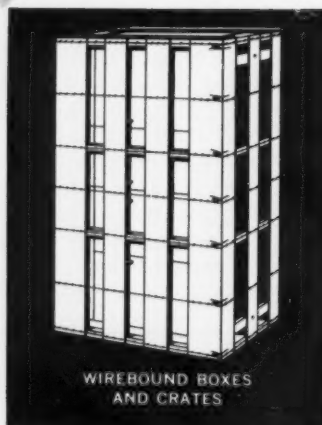


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## BETTER QUALITY CONTROL

(Continued)

box walls, as when they overhang the edge of pallets.

I say a properly made container comes out with no more variation in quality than many other products. It would be fine if we could always base specifications on maximum performance. But the laws of probability say no. Such a performance is a goal to shoot for. Barring a major development of some kind, the upward trend of average quality is naturally long and slow.

The downgrading of containers by shippers has been going on for many years. The large savings when companies switched to less expensive packs have whetted appetites for more of the same. But you can't expect similar economies every year.

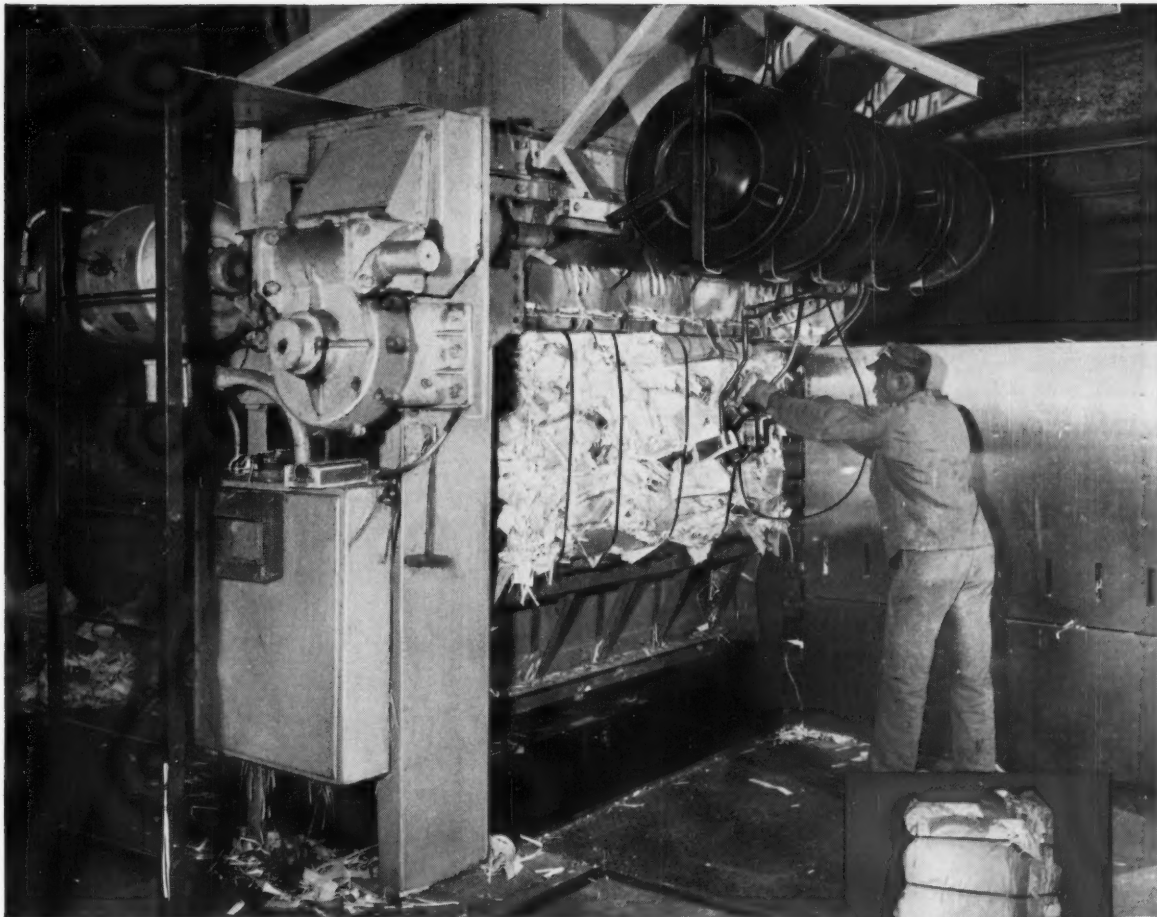
Mr. Candell asks whether box makers would be content to find as much variation in materials as he finds in boxes. We aren't content, but sometimes we have to be. Most of us know the variations exist and use the materials accordingly. Box makers who don't know about variations are in for trouble.

Mr. Candell asks about standard tests for initial loads and deflection limits. I speak as a member of ASTM Committee D-10 that drafted this test. The purpose of the initial 50-lb load was to ensure a definite contact between the test specimen and platens of the compression tester. This same test has been in use at least 35 years. It gives us a standard procedure.

Concerning double wall container tests, it is common to consider deflections at considerably higher levels than single wall ( $\frac{1}{8}$  inch). The reason is the greater thickness of double wall. This board requires wider scores which give greater rolling and settling under load.

Low cost corrugated fibreboard shipping containers do a real marketing job and do it well. They place the product in the customer's hand at low cost, anywhere, and in one usable anywhere, in one piece. ♦ ♦





## Bale Waste Paper?

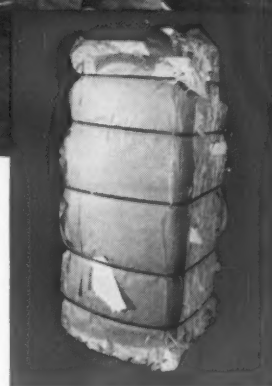
**Signode way is faster, easier, cheaper, safer  
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ONE PIECE wirebound blank 21 inches wide goes on one 32½ inches wide to form a deep pallet box to ship components to Hill AF Base. Box depth is flexible.



Wire bound is

## Multi-Use World Wide Traveler

**T**HE WORLD'S largest dealer and distributor of airplane wheel assemblies runs like a clock. Monumental problems of material handling, packaging, record keeping, and inventory control are solved through a tightly coordinated system.

The Ogden Air Materiel Area with headquarters at Hill Air Force Base, Ogden, Utah supplies the U.S.A.F. with aircraft wheel parts throughout the world.

In addition, it serves U.S.A.F. installations and Air National Guard in nine states, including Alaska. It supplies everything needed to keep manned and unmanned aircraft serviceable and ready.

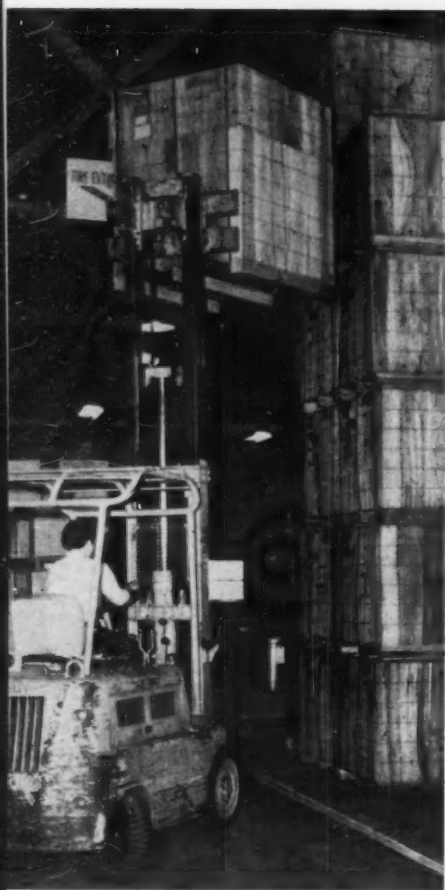
The depot is almost always on

a rush basis. Repair and replacement parts are packed, shipped, and delivered by air with the least possible delay.

To get an idea of its size, one warehouse alone has a 4-acre floor. It's devoted to Receiving-Inspection, Preservation-Packaging, Packing, and Shipping operations. A network of other warehouses provides dozens of acres of floor space for storage and supply issuing.

### Packing Is Vital

In an operation like this, packaging is vital. Procurement traffic and packaging control, in conjunction with depot packaging personnel, provide the guidance and know-how for packing and shipping everything that comes



PACKED wirebound pallet boxes are stacked five and six high to 20-foot height at depot warehouse. This high stack aids storage needs.

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Save up to 90% on pallet costs with Mead Poke-Pak® and Glide-Pak® expendable, fibreboard pallets...for handling, shipping and warehousing unit loads of bags and boxes. Made of tough virgin Kraft and hardwood pulps, Mead Poke-Pak and Glide-Pak carry the heaviest loads...eliminate return headaches, freight credits and charge backs. Write for free booklet today. Mead Board Sales, Inc., 118 West First Street, Dayton 2, Ohio.



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**WIREBOUND** shipping containers include pallet boxes of various depths destined for Hill AFB. Flexible depth boxes hold brake and wheel assembly replacements.



**WIDTHS** of cleats plus base height makes this container over five feet deep. Parts go to the Air Force Base. It reuses the box to ship materials throughout the world.

in and goes out. Hill AFB packaging men must work closely with packaging and material handling engineers of the contractors who produce supplies for the Air Force.

An outstanding example of the results of this type of cooperation is Hill's work with Bendix Aviation Corporation. It has resulted in a time-saving, cost-cutting multiple-use wirebound pallet box. The box serves as:

- The supplier's original shipping container.
- A high-stacking storage bin in warehousing.
- A shipping container for the depot.
- A return container, reused



**PALLET** box 21-inches deep came from component supplier. Now it goes to distant U.S.A.F. location.

by distant U.S.A.F. installations to send aircraft parts to Hill for repairs.

Bendix supplies aircraft parts and end items, including wheel and brake assemblies. Glenn A. Overstake, in charge of Procurement Traffic and Packaging Control at Hill, and Earl K. Gustin, packaging engineer at Bendix, wanted to get away from Bendix having to stock wirebound blanks of different widths to form bins of corresponding depths.

#### **Flexible Depth**

In mind was a pallet box with a heavy 2-way entry pallet base. A 1-piece wirebound wrap-around blank would form the sides of the container, and the lid. They developed a flexible depth wirebound box that is formed by joining, cleat upon cleat, two 1-piece wirebound blanks of either identical or different sizes.

The two blanks are joined by nails, screws, or bolts through adjoining cleats or by patented clamps or clips. Theoretically, you can assemble a bin of almost any depth with only three widths of wirebound blanks, 14, 21, and 31½ inches.

#### **Containers Are Reused**

Hill usually sends incoming shipments directly to the ware-

house to await reshipment intact, or to be unpacked piece by piece as orders are filled. When a box is empty, it becomes a container for a consolidated shipment to some distant U.S.A.F. installation.

By reusing the boxes, Hill needs hardly any new boxes made to order by carpenters. The wirebound boxes lend perfectly to air shipment because they're light and thrifty of space.

Shipping containers are often scarce at Air Force Bases. The reuseability of the wirebound pallet boxes has been a boon to them. Many boxes have made many trips from Hill to foreign installations and back again. They use a box as long as it passes inspection.

One of Hill's goals is to economize on its packaging expense without a loss of quality and protection.

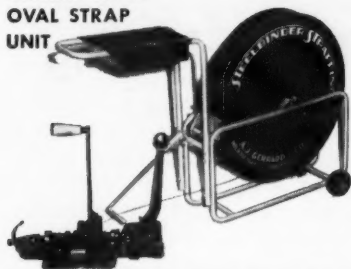
Because of the great quantities of items used in aircraft overhaul, Hill keeps surveying and reviewing to find better and more economical methods of having suppliers pack goods.

Specific example: aircraft brake lining used to be hand-packed 100 pieces to a cellular carton. This was costly and time consuming. Now they're bulk-packed 500 to a carton. The cartons are shipped in wirebound pallet boxes as master containers. This lowers packing costs. ♦ ♦



## NEW PRODUCTS

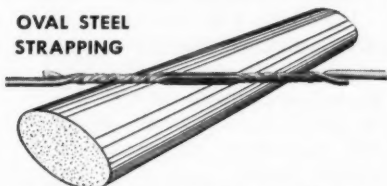
### COMBINATION OVAL STRAP UNIT



**Combination Unit 6002**—A compact unit that can cut strapping costs as much as 50% is now available. Combination includes oval strapping tool, stationary dispenser and oval steel strapping. Write: A. J. Gerrard, 402 East Touhy Avenue, Des Plaines, Illinois

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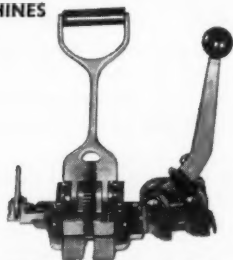
### OVAL STEEL STRAPPING



Saves you as much as 50 to 80% on strapping cost. Oval steel strapping gives you 3 times more the lineal feet per pound with equal tensile strength to other types of strapping. Write: A. J. Gerrard, 402 East Touhy Avenue, Des Plaines, Illinois.

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### OVAL STRAPPING MACHINES



**Models 2820 and 2840** are available in several sizes and styles to meet practically every industrial requirement. Write: A. J. Gerrard, 402 East Touhy Avenue, Des Plaines, Illinois.

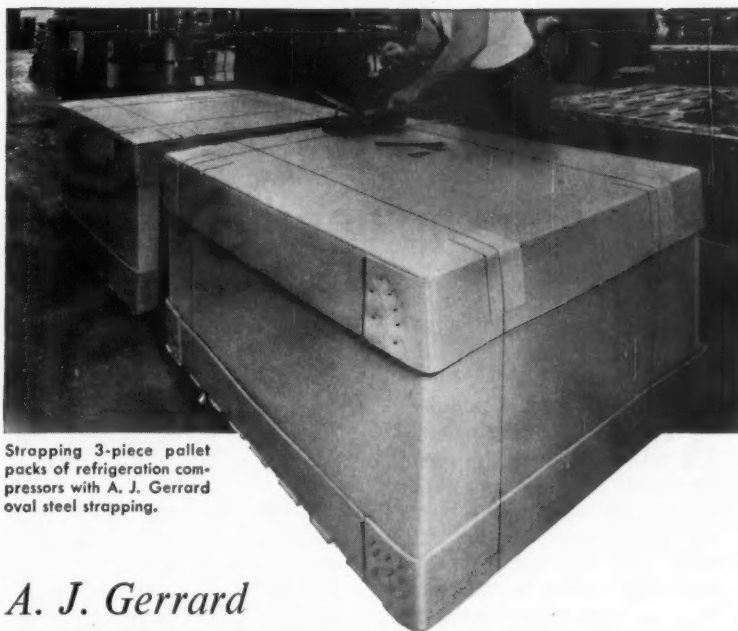
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### STRAP AND WIRE CUTTER



**Model 503**—Dual purpose cutter—cuts oval strapping, up to 3/4" wide flat strap, as well as 14 gauge and finer round wire. A valuable tool that quickly pays-for-itself in any receiving or shipping department. Write: A. J. Gerrard, 402 East Touhy Avenue, Des Plaines, Illinois.

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Strapping 3-piece pallet packs of refrigeration compressors with A. J. Gerrard oval steel strapping.

*A. J. Gerrard*

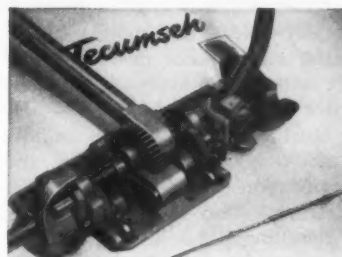
*Oval Steel Strapping gives you*

## 3 TIMES THE FOOTAGE PER POUND

"A SUBSTANTIAL SAVINGS IN PACKAGING MATERIALS was realized through the adoption of A. J. Gerrard oval steel strapping. The reason: each 100 lbs. of oval steel strapping delivers 3 times the lineal footage compared to other types of strapping," states Tecumseh Products Company, Tecumseh, Michigan.

**ONE TOOL OPERATION!** "One tool is all that's needed to tension, twist and cut the strapping. It takes only about 2 minutes to strap an average pallet pack unit with oval strapping. We're able to package and strap an average of 18,000 compressors a day in pallet packs, ranging in size from 1/12 to 5 hp."

**THESE SAME BIG SAVINGS** can be yours. For details, use the reader service card or attach the coupon below to your letterhead.



### CHECK THESE FEATURES

- No waste feature, with two step gripper
- One machine operation to tension, twist and cut
- Strapping used directly from coil, minimizing waste
- No seals required, machine forms twist tie

FREE NEW CATALOG

**A. J. GERRARD** / STRAPPING  
& COMPANY MATERIALS

402 East Touhy Avenue

DES PLAINES, ILLINOIS

- ☐ Please send detailed information on oval steel strapping.
- ☐ Send free copy of handbook of Strapping and Material Handling products.

Circle 25 on Reader Service Card for more information

# Applying Engineering Principles To Packaging

By Thomas P. Wharton, President  
Packaging Consultants Incorporated

**A**LMOST ANYONE can improve packaging by spending more money. And almost anyone can save money by using inadequate packaging. But when you improve packaging and save money at the same time, that's package engineering.

Package engineering is a science. It has to be. The packaging engineer must have an intimate knowledge of all packaging materials. He should master the techniques of computing container design. He must scientifically select the right cushioning material for every job and compute the minimum thickness for adequate protection. He must be familiar with techniques and devices used in shock and vibration isolation, blocking and bracing, and in-transit material handling. And he should keep up to date on the latest automatic packaging machinery.

He must be able to analyze all costs. His direct costs are expenditures for containers, packaging materials, and packaging line labor. Indirect costs of importance to the packaging engineer include handling and shipping costs due to container

weight and the storage and shipping costs due to the container size.

Good packaging means optimum packaging; it's as wrong to use too much as too little. The trouble is that excessive packaging is harder to recognize because it doesn't show up in breakage or customer complaints.

## The Scientific Thesis

The scientific approach to packaging can be boiled down to a simple thesis. You can develop optimum packaging at least cost if you know three things: (1) *the physical characteristics of the product*. (2) *how it's manufactured, handled, and distributed*. (3) *the design characteristics of materials and containers available to do the job*. In short, you must know what you're designing for, what you're designing against, and what you're designing with.

Learn everything there is to know about the item you're going to package. What is it made of, how vulnerable is it to rust and deterioration? What are its inherent shock and vibration

strengths or weaknesses? Sometimes you'll need to know the location of its center of gravity, the rotational moment of inertia, strength of a cantilevered component, or the G-factor in each of the three major axes.

Where do you find this kind of information? Often the design engineer doesn't know. The packaging engineer must be able to find out for himself, or be able to base his designs on assumed data.

Sometimes the product designers saddle the packaging man with unrealistic assumptions which can complicate packaging. For example, we know of cases where long-haired missile scientists specified packages which would keep the item from experiencing forces higher than three G's in any direction. Why? Because they knew that the missile would not get more than three G's in the axial direction when fired.

This is false logic. First of all, there's no relationship between the shocks expected in handling and the shock encountered in firing. The missile has a built-in safety factor to withstand more

**PERFORMANCE OF cushioning material has no relationship to the cost per board foot or pound. Some materials selling at the very same price may vary tenfold in absorbing shocks during handling.**

PRICE PER BOARD FOOT	ENERGY ABSORPTION PER DOLLAR
Wool felt, medium	- 11 p.c.f.
Sponge rubber, soft	- 22 p.c.f.
Polyvinyl chloride foam	- 4 p.c.f.
Special polystyrene foam	- 1 p.c.f.
Cellulose wadding, firm	- 9 p.c.f.
Urethane foam, med.	- 3 p.c.f.
Bonded hair, flat	- 3 p.c.f.
Bonded hair, on edge	- 3 p.c.f.
Cellulose wadding, soft	- 3 p.c.f.

shock than its gets in firing. Moreover, it would be an unusual coincidence if the missile—or any other product were equally sensitive in all directions. The packaging man should challenge such wrong assumptions.

Progressive companies consult the packaging engineer when they design the product. It not only helps him understand the product better, it gives him a chance to point out design changes that might simplify packaging and handling. An added bracket, a recessed handle, thicker skin or frame, or tie-down point might make packaging cheaper and easier. But manufacturers often don't find this out until it's too late.

### **Manufacturing, Handling, and Distribution**

**Manufacturing**—The packaging engineer may have to work with the production line because packaging often is a part of production. His packaging line must tie into production without creating bottlenecks. It might be necessary for him to work with designers of packaging machinery. American industry is not just producing products, it is producing packaged products.

**Material handling**—The design of the package may influence the way it's handled, and vice versa. The packaging engineer must familiarize himself with carrier dimensions, capacities of handling equipment, and conditions at the point of delivery. We can't neglect these important considerations. A good package loses its usefulness if it doesn't fit the distribution system. A recent example—a huge missile container that was too big to go through a tunnel enroute.

Sometimes the packaging engineer is asked to design against unreasonable assumed hazards. We were asked to develop packaging and shock-isolation systems that would work at minus 80°F. An alert engineer on our staff questioned the need. He found that the request was based

on a military policy that the item had to be operable at minus 40° F, transported at minus 65° F, and stored at minus 80° F. The designer took this to mean that everything had to work at the lowest temperature. It actually meant that the shock isolation system had to be able to survive storage at minus 80° F, but only had to work at minus 40° F—a big difference.

### **Packaging Materials**

Packaging engineers today have much information about materials that they didn't have a few years ago. And there are available many excellent specifications that give the design characteristics of packaging materials and containers. Manufacturers, carriers, insurance companies, and the users themselves are coming up with their own specifications. But this is not enough. We used to say that packing is the art of selecting the right materials for a particular job—much like a druggist filling a prescription—but package engineering has gone far beyond that now.

### **Keeping Up To Date**

We see and hear of innovations in packaging almost daily. Too many packaging men are interested in reading about new developments but fail to apply them to their jobs. It's not enough just to know about advancements; we must deliberately try to develop an attitude of trying new things, looking for new ways to make packages cheaper and better.

Let's look at a few areas where additional work needs to be done to keep the science of packaging up to date.

**Preservation**—We have our standard preservative oils, greases, and chemicals, and our dehumidified packages. But where do we go from here? Some companies are working on silicone additives for polyurethane foams to control their texture. We know that silicone-base oils are excellent for lubricating

vehicles in tropical and arctic operations. Why not a family of silicone-base preservative oils and greases with inhibiting properties for use in extreme high and low temperatures?

Volatile corrosion inhibitor chemicals are fairly common. VCI's when dissolved in water render it incapable of causing rust. When vaporized they form a molecular coating on metal surfaces to prevent rust. But we haven't capitalized on VCI's to the fullest extent. Many overly conservative organizations won't use them because in accelerated laboratory tests with VCI, non-ferrous metals show stains. But some of the biggest companies have been using VCI for over 10 years with outstanding success.

Let's go a step further. Why not incorporate a VCI chemical into foam cushioning so the cushioning may also act as a corrosion inhibitor. And while we're at it, why not add a desiccant in foam cushioning so it will also act as a dehydrating agent?

Here's another point on preservation. Industry has spent hundreds of dollars to develop pressurized metal containers to stop corrosion. Do they need to be pressurized? Physicists have found that humid air has a hard time passing through long, narrow tubes (with length upwards of 10 times the diameter). By letting the container breathe through a thin tube we can control its relative humidity without pressurizing. Here is a chance to slash weight, cube, and cost.

**Cushioning**—here's where we can really get scientific. True, the packaging industry is waking up to the idea that the same laws of physics that govern the rest of the universe also govern cushioning. Still, I am sure that I have seen more misapplications of cushioning materials than proper applications.

There's an ideal stiffness that gives you the thinnest possible cushioning for any package. Anything more or less than this

*(Continued on next page)*

# CLEVELAND CONTAINER'S HEAVY-WALL TUBING CUTS MATERIAL HANDLING COSTS

The use of heavy-wall paper tubing as an important pallet component is a new idea in material handling technique! Efficient and unique, it is a concept that is quickly applied to many kinds of products resulting in immediate savings.

## LOWER PALLET COST

The economy starts with a lower unit cost! Cheaper than wood, heavy-wall paper tubing is available in all popular diameters, wall thicknesses and lengths.

## EXPENDABLE

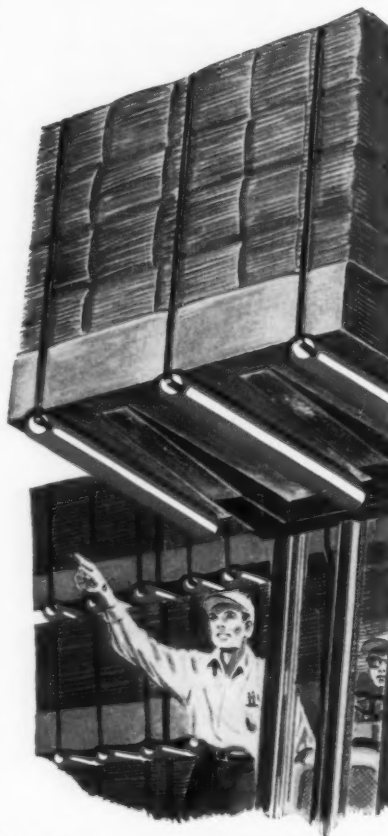
Heavy-wall paper tubing is completely expendable! No return freight costs! No pallet damages! Less capital tied up in pallet investment!

## REDUCES WEIGHT

but supports a heavy load. Provides a "shock-absorber" effect which guards against load shifts and damage.

Illustrated is heavy-wall tubing used with steel strapping to form a pallet for corrugated paper.

✓ What strength tubing is correct for your product? Write our Engineering Department for data.



## THE CLEVELAND CONTAINER COMPANY

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Abrasive  
Division  
at Cleveland

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## ENGINEERING PRINCIPLES

(Continued)

ideal stiffness means inefficient design.

If you know the weight of the product you're packaging, the area of cushion on which it acts, the height of drop the package must protect against, and the fragility of the item, you can compute the ideal cushion stiffness. Don't think in terms of density as a measure of stiffness. And don't use one stiffness of cushioning for all your packaging. Don't let price be your means of comparison. The most economical material is the one that provides the greatest energy absorption per cubic inch, energy absorption per pound, or in the final analysis, energy absorption per dollar.

Urethane foam has probably been talked about by more packaging engineers than any other cushioning material. Its S-shaped stress-strain curve indicates that it can absorb more energy than other materials of comparable stiffness. But we have played around with the properties of urethane long enough. Now we need practical techniques of putting it into packages. Because it is basically expensive, we must develop techniques which use less of it and less labor in its application. Fortunately, this ability of this material to foam in place, together with its high tensile strength and its excellent adhesion, lends it to economical design and tricky application techniques. For example, by designing the package to use this material in shear and tension as well as in compression, you may need only to foam the corners of the container instead of filling it completely.

Polystyrene foam is another material that's waiting to be used. Until recently it has had its limitations because of its crushable nature. But some of the people who make it have come up with a special polystyrene cushioning material with excellent shock-absorbing properties. Pound for pound or dollar for dollar it's one of the highest energy-absorbing materials



available. Polystyrene foam also comes in sandwich-like sheets, foamed between two facings of kraft paper, like corrugated board. Unlike corrugated, however, it's equally strong in both directions. And it absorbs energy better when used for blocking, filler pads, or separators.

These and many other materials are on the market waiting to be used. It's up to you to take advantage of them.

Here's another good example of the application of engineering principles to packaging. Recently the Air Force wanted to fly fresh tomatoes to Alaska without freezing them. The first package they tried needed six or eight inches of insulation on all six faces, making it too big for air shipment. An imaginative packaging engineer at Wright Field reasoned this way: When one gram of water is lowered one degree Centigrade, it gives up one calorie of heat. But when one degree of water at zero degrees C. becomes one gram of ice at zero degrees C., it must give up 80 calories of heat. This is called the "heat of fusion". Knowing the temperature differences and how long the flight to Alaska took, this bright engineer had no trouble computing the number of grams of water needed to protect the tomatoes. He used water to keep them from freezing! Insulation was provided with a two-ply waterproof bag with an absorbent material between plies, and the computed amount of water soaked up in this absorbent material. The resulting package took up only a fraction of the space that the original one needed. An outstanding example of how simple scientific principles can be used to radically improve packaging.

Much is being done today to take the guesswork out of packaging—to make it more scientific, less hit-and-miss, less trial and error. The field is wide open, limited only by our abilities and imaginations. There are plenty of problems and the best solutions will be based on the application of proven engineering principles. ♦ ♦



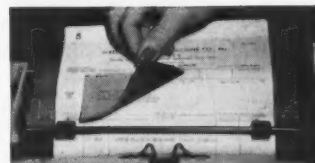
## Just "touch" the carton and there's your label

**Weber Touch-Stenciling—the fast easy way to address multiple carton shipments...**

No more stencilboards, rubber stamps or label typing. Instead, you can print facsimile labels directly on cartons with just a "touch" of a Web-O-Print hand duplicator.

Stencils are pre-cut to duplicate your label. Customer's name and address or product information is filled in on a typewriter or by hand. Then slip the stencil on the handy duplicator and touch-stencil all the cartons in the shipment. The duplicator leaves a clean, sharp print that will not fade, rub or wash off.

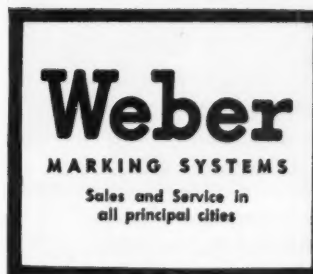
It's so easy to do. With a smooth, one-hand motion 40 to 50 cartons can be addressed in a minute. The duplicator holds enough ink for several thousand impressions and it prints anywhere — cardboard, wood, paper, smooth or rough, round or flat surfaces. After the shipment has been addressed the stencil is thrown away, saving filing time and space.



**FAST, EASY.** Stencils are pre-cut to your specifications. Type or handwrite in the variable data and slip on duplicator. Takes just seconds to change stencils for each order.



Send for free bulletin on Weber "Touch-Stenciling" methods. Packed with ideas on addressing and marking multiple shipments.



**WEBER MARKING SYSTEMS, INC.**  
Dept. 18-D  
Weber Industrial Park,  
Mount Prospect, Illinois

Send me your bulletin on "Touch-Stenciling" methods.

Company

Individual

Position

Address

City  Zone  State

Circle 161 on Reader Service Card



## PACKAGING & SHIPPING IDEA of the month

### Photography Improves Packing, Speeds Deliveries

**P**HOTOGRAPHY has an important place in material handling at the S & C Electric Co., Chicago. They make and ship high-voltage switchgear.

They use photography to:

- Speed rail deliveries
- Improve packing methods
- Improve customer relations
- Make shipping safer.

S & C mails photographs of outgoing shipments to customers' traffic departments. Since installation sites for the shipped equipment rarely are next to rail

sidings, the pictures prepare the customer. They tell him what he might need in the way of cranes, low boys, or similar specialized equipment. The customer, prepared, gets the goods to the installation site sooner, more economically. He saves on demurrage by releasing freight cars sooner.

Robert Gay, supervisor of material services, first used photography in the S & C shipping department two years ago. He wanted to determine the best methods for blocking heavy

switchgear to prevent its falling from flat cars. He got the field engineers to photograph the switchgear as received on the cars by customers. Then Gay compared these pictures with those he took when the shipment left the plant. That way he settled on the best blocking.

Today, this remains a primary function of shipping. Photos are still standard S & C procedure on all outgoing flatcar and boxcar rail shipments.

It has had unexpected advantages. First, they use photographs of successful blocking to train new workers. The new men, knowing that photos of their work will be kept on record, try to do a more responsible job. The photographs increase their sense of accountability.

Second, the photos speed shipping. Railroad inspectors give preliminary acceptance of cars based on blocking methods shown in photographs of similar prior shipments.

Third, S & C field engineers usually meet shipments. Switchgear is a major purchase, S & C gains much customer good will just by the interest the field engineer displays in taking photos.

Fourth, photographs have often helped establish where damage might have occurred so that claims can be fairly established.

S & C estimates that the photos cost no more than 30¢ a shipment. They use a Polaroid camera which produces prints immediately. ♦ ♦



**BLOCKING** methods are tested by comparison pictures of switchgear before and after rail trip to customers.



## Use your AIM\*... Westinghouse does... Strapping station plan pays off

**WESTINGHOUSE ELECTRIC CORPORATION, BUFFALO, NEW YORK,** uses a new method to package electric motors for shipment. Motors are bolted to skids, and given protective fibreboard covers. Then they move along a conveyor to an Acme Steel strapping station consisting of a fully-powered A4 Steelstrapper and an E41 Power Strap Feed Unit. (Idea S3-55)

The E41 power feeds strap around the package. The A4 Steelstrapper tensions, cuts and seals strap, all with power and through finger tip control. This new strapping station plan has reduced packaging manhours by more than 65%, packaging material costs by as much as 20 per cent, and has virtually eliminated product damage from shipment.

**\*Use your Acme Idea Man** for packaging and shipping ideas that will benefit your operations. Write Dept. MJS-40, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Limited, 743 Warden Ave., Toronto 13, Ontario.

Acme Idea Man  
R. L. Hughes  
works with many  
industries to solve  
packaging and  
shipping problems.



# STEEL STRAPPING

Circle 1 on Reader Service Card



## NEWS ABOUT SPHE

# Stop Shipping Damage

by Charles L. Lippman, president, SPHE



**I'D LIKE** to see the receipt of damaged goods entirely eliminated. This is one of my pet subjects. I was reminded when I saw the theme of the National Freight Claim Council's annual membership meeting: "Cooperation Cuts Claims." I think cutting claims is only half the job.

To digress a moment, the National Freight Claim Council has invited all SPHE members to its 23rd annual membership meeting in Minneapolis June 13-16. The Water Carrier Industry will be represented by our own board chairman, John Mount.

Back to the topic at hand, let me set the scene during World War II when I was an ordnance officer in the Southwest Pacific. When I received new weapons and replacement parts for weapons and vehicles, some arrived so badly rusted they could not be used. I'm not blaming the military or the manufacturers. But someone goofed. Sometimes things got so bad we had to cannibalize weapons and vehicles to supply desperately needed equipment.

Now I'm on the other end of the line—industrial packaging and shipping. I hate to see materials damaged on arrival at customers' plants, regardless of whose fault. Since we're in a

worldwide economic struggle, the cheapest and easiest way to increase production is to eliminate intransit damage.

As packaging and handling engineers, we should make certain that all of industry cooperates to eliminate damage to finished products as well as to cut claims.

It takes positive effort to do this. It's a problem similar to plant safety. I think you are all familiar with the tremendous job industry has done in reducing lost time injuries. This was done by concentrated and continuing programs to make employees aware of hazards.

A similar program by the packaging and shipping industry would bring comparable results.

I heartily endorse the meeting of the National Freight Claim Council of the American Truck Association Inc. I hope there will be good representation of packaging and handling engineers to take part in the discussions.

## GOLDEN GATE TO HOLD MH, PACKAGING DAY

The Golden Gate Chapter of SPHE will hold its fifth annual Industrial Material Handling and Packaging Conference April 12 on the University of California campus. The chapter has been assisting the steering committee in selecting subjects and speakers.

In other business, the Golden Gate Chapter recently heard talks by two members. Bill Brouwers, Insurance Companies of North America, spoke on packaging and the export trade. Bill Dalton, West Coast manager for Container Laboratories Inc., spoke on problems he faces in the applied package testing field.

BALTIMORE—Maryland Division heard a talk on "Packaging in Japan" by Edward H. Gallagher, president of Delmar Transportation Co. of Baltimore.

NEW YORK CITY—Dr. Leonard G. Ghering, president of Preston Laboratories Inc. of Butler, Pa., addressed the Eastern Chapter at a recent meeting. Ghering is considered a leading authority on the physical characteristics of glass containers.

## CENTRAL OHIO PLANS CONFERENCE

The fourth annual Conference on Packaging and Handling, sponsored by the Central Ohio Chapter of Packaging and Handling Engineers, will be held May 19. About 100 are expected to attend the meeting on the campus of Ohio State University.

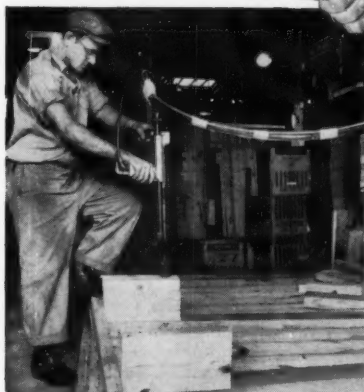
Program Chairman William Robertson, Mead Corp., says speakers from the OSU faculty and industry will cover all phases of packaging and handling. The fee, same for members and nonmembers, will be \$10 for each company and \$5 for each person from the company. Anyone may attend.

Robertson reports that two SPHE officials indicated they would attend: national Vice President K. V. Moulton, General Electric, and Regional Director W. G. Burden, Continental Can Co.



# ONE POWASERT®

**Nailing Machine  
Drives More Nails  
than 4 hammers**



Even 20d nails fed and driven automatically without effort.



POWASERT closes boxes for fragile goods rapidly, accurately, and safely.

Powasert Nailing Machines cut nailing time 60%. They reduce fatigue, speed production, eliminate nailing bottlenecks and do a better job. Increased safety: no bruised fingers; bent or flying nails are eliminated. Morale is improved. Money is saved.

A window manufacturer in Minnesota reports a 50% reduction in the total time required to manufacture their windows. Powasert nailers also permitted conveyerizing the production line. Hammer marks were eliminated.

An Illinois woodworking company reported they were producing 8 top and bottom crate sections each hour. After a Powasert nailer was installed production leaped to 32 top and bottom crate sections each hour for a 400% increase.

A boat builder uses nails for high quality sea skiffs—replacing screws—and increased production of decks, floors, and small parts by 60% and over-all production by 15%. Production has increased from 8 to 15 boats a week.

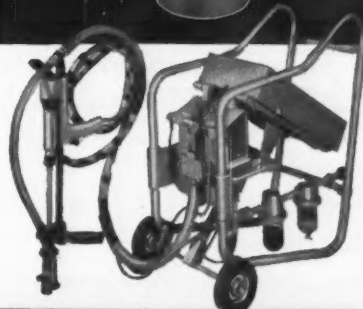
If you are nailing by hand in any volume, Powasert Nailers can help you cut costs and improve quality. Write us today for more information or a trial in your plant on your production line.

## **United**

**UNITED SHOE MACHINERY CORPORATION**

140 Federal Street, Boston, Massachusetts

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Single blow POWASERT nailer with speeds up to 150 nails per minute and the POWASERT multiple blow nailer and Feeder-separator supplied with both models.



## USEFUL LITERATURE

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#### Economical Crane Service

A complete line of jib cranes and crane bridges is covered in bulletin 15005-5B-59. Capacities of the Shaw-Box Load Lifter cranes range from ½ through 50 tons, spans through 60-feet. Models include top running and underhung types, with hand operated or electrically operated bridge drives. Many of the crane bridges can be purchased in build-it-yourself kit form.

*Manning, Maxwell & Moore*

Circle 400 on Reader Service Card

#### Transferring Ice Cream From Van To Freezer

Speed is the important factor. One of the main stories in Lift, December, 1959 issue tells how a standard Globe Platform Oilift helps contribute to the speed and efficiency of handling bulk shipments of ice cream.

*Globe Hoist Co.*

Circle 401 on Reader Service Card

#### Steel Industrial Scales

Company says that steel plus advanced design makes the difference. Literature describes the Murphy-

#### Designing A Public Warehouse For Storing Flat Bales Of Cotton

Marketing Research Report No. 355 is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. It costs \$1. Prepared by the U. S. Department of Agriculture, Agricultural Marketing Service, Marketing Research Division, it's based on a research project that covered improved layouts and designs for cotton warehouses and compresses. Cotton warehousemen made their facilities available for layout and design studies, and furnished construction cost data. Report lists shortcomings in existing cotton storage compartments and warehouses, presents layouts for cotton storage compartments and warehouses. It gives building designs of compartments and warehouses, presents improved storage compartments, and gives a comparison of space and costs for four compartments. Complete specifications are given for a cotton warehouse for storing 40,000 to 50,000 flat bales.

Cardinal Motor Truck scales. They have welded steel construction throughout. Features include: higher stressing qualities, high shock resistance, greater strength and rigidity with less weight, long life, and clean cut design. Capacities: 10 tons and up. Platforms: 18 feet and longer.

*Cardinal Scale Mfg. Co.*

Circle 402 on Reader Service Card

#### Power Transmission Products

The Boston Gear Catalog 57 is a textbook of drive design and maintenance. By taking full advantage of its information, you can simplify your design and product selection job, save time, and trouble. Handy tab indexes help you find your item. Catalog contains 58 pages of engineering tables, formulas, and descriptive text, is 663 pages in content.

*Boston Gear Works*

Circle 403 on Reader Service Card

#### Better Inching In Tight Places

The F-50T5 5,000 lb capacity industrial truck features Acro-Smooth, a carbon-pile speed control. This control acts to give the operator smoother, more precise control. Literature gives diagrams, photographs, and a detailed analysis of each important working part of the truck.

*The Elwell-Parker Electric Co.*

Circle 404 on Reader Service Card

#### Packaging Bill Cut 25%

Volume 1, Number 4, of Packaging Review features a story on how a company cut its packaging cost 25%. It developed a simplified system of interior protective packaging in the corrugated boxes used for shipping adding machines. Other case histories also show savings.

*Union Bag-Camp Paper Corp.*

Circle 405 on Reader Service Card

#### Flexible Ground-Level Loading System

Engineering bulletin MD212 details the development and expansion of the company's line of mobile loading ramps into a completely integrated system of ground level loading for plant-wide shipping and receiving. The Mobil-Dock System can solve a wide variety of plant and warehouse loading and handling problems according to the company. Typical problems shown include: ground level plants, plants with limited dock

# OPEN ANY FREIGHT CAR DOOR IN 20 SECONDS OR LESS with the

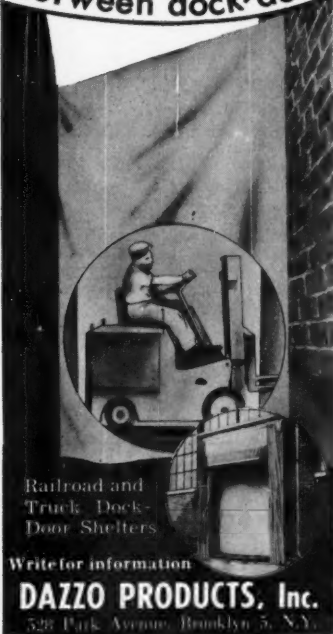


Write for complete details  
and railway products catalog  
The Nolan Co., 110 Pennsylvania St., Bowerston, Ohio

ONLY **\$4500**

F.O.B. Bowerston

## DAZZO retractable tunnel-passage between dock-door and carrier



### Dock-Door SHELTERS

- Protection from rain, snow, winds, cold, heat.
- Saves FUEL.
- Protects MERCHANDISE.
- Reduces ACCIDENTS.
- Raises employee MORALE.
- Expands by gravity.
- Retracts in seconds.
- One-man operation.

Pays for Itself  
in a Year or  
Less from  
Savings.

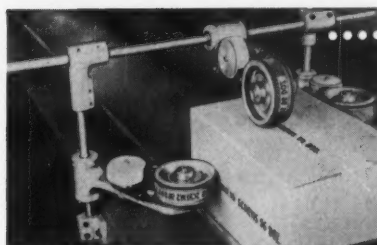
Write for information

**DAZZO PRODUCTS, Inc.**

528 Park Avenue, Brooklyn 5, N.Y.

Circle 52 on Reader Service Card

APRIL, 1960



MODEL 4 ARC  
Automatic—Return—Continuous  
1", 2 1/2", 4" printing widths

**NEW**  
CONVEYOR LINE  
MARKER WITH  
VERSATILITY PLUS

## FORCE VERSA-MATIC

Force's New Versa-Matic is unmatched in versatility. It prints clear codes, dates, identifications on cartons, packages, cases and web materials at high speed, low cost! You can...

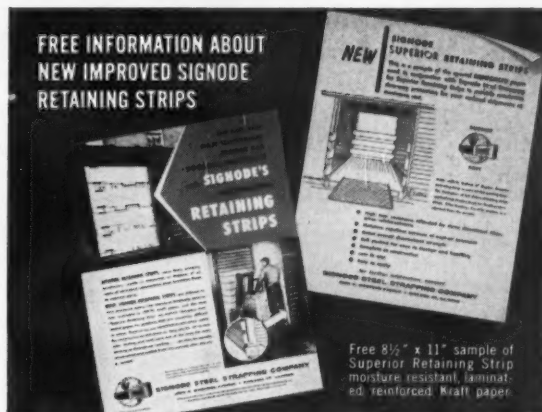
- Change type and dies instantly
- Use one design for many positions, actions
- Mark at full conveyor line speed
- Maintain clean print through the run
- Remove printing, inking parts without tools
- Mount marker at top or either side
- Use multiple units for wide webs

Prints 18" long impression on continuous action, 13" long on return action.

Write for  
data sheet,  
specifications

WM. A. **FORCE** & CO.,  
Incorporated  
216 Nichols Ave. Brooklyn 8, N.Y.

### FREE INFORMATION ABOUT NEW IMPROVED SIGNODE RETAINING STRIPS



## SIGNODE Retaining Strips save you money these ways:

- Reduce (most often stop) damage to cargo at car doorways
- Reduce dunnage by 20 to 40 pounds over old-fashioned door barricades
- Save on storage, handling. Come in clean, compact rolls, less than 6" diameter, of 50 strips
- Fast and easy installation speeds preparation for loading
- Strips at loading door tensioned and sealed from outside

Data Sheet 201S includes sample as noted above. Send now for yours.

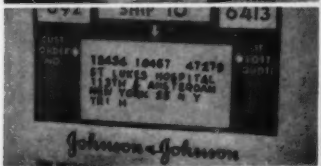
### SIGNODE STEEL STRAPPING CO.

Dept. RS, 2618 N. Western Avenue, Chicago 47, Illinois  
Offices Coast to Coast

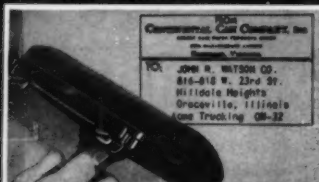
Foreign Subsidiaries and Distributors World-Wide

In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

Circle 142 on Reader Service Card



With "Ship To" frame pre-printed by carton maker, shipping clerk uses Multistamp Duplicator to address up to 1000 pieces of the same shipment with the same low-cost stencil . . . identically, accurately, quickly, easily.



Using Multistamp FORM-CUT stencil, printing the form and fill-in data at the same time is an easy, one-man, one-hand operation. Your form is custom die-cut in the stencil . . . you fill them in with ball point pen or typewriter.

## MULTISTAMP Stencil Addressing System Quickest Way for Volume Shipping

EASY-TO-READ  
FADE PROOF

QUICK DRYING  
WATERPROOF

Shipping department addressing errors are virtually eliminated when address and routing information are printed directly on cartons by the Multistamp Stencil Duplicator. The print becomes an identical smear-proof . . . fade-proof . . . water-proof . . . permanent part of every carton. Following simplified Multistamp Marking Methods, the address stencil is cut in the same typing which fills out shipping order, bill of lading, invoice, and other forms. One typing . . . one easy operation.



**MULTISTAMP**  
STENCIL DUPLICATOR

THE MULTISTAMP CO. NORFOLK, VA.

Circle 115 on Reader Service Card

## USEFUL LITERATURE

(Continued)

facilities, scattered buildings with one central dock area, production line purchase parts feeding, away-from-plant operations.

Magline Inc.

Circle 407 on Reader Service Card

## 4,000 Lb Capacity Electric Fork Truck

Bulletin SS-363 describes the Car-loader 4024. Complete engineering and dimensional specifications are given on the 4,000 lb capacity battery powered fork truck.

Industrial Truck Division  
Clark Equipment Co.

Circle 406 on Reader Service Card

## Durable Continuous Weighing Scale

A pneumatically-operated belt (stream) weigher for the continuous weighing of dry materials at low to medium rates is detailed in a 2-page bulletin. It's called the Omega Pneu-Weigh, Model 36-20W, and is ideal wherever accurate and dependable measurement and control of flow of dry material is important. Has a wide range of 10:1 constant speed drive and 50:1 with variable speed belt drive. Capacity is 0 to 3,000 lb per minute. A simple pneumatic sensing



Reduce  
Shipping Dept. costs!



FOR UNGUMMED LABELS TO  
CANS, BOTTLES, CARTONS.  
Fast! Efficient! Economical!

FREE

TRY IT FOR 10 DAYS

No Obligation

Write today on your letterhead

Glue-Fast Equipment Co., Inc.

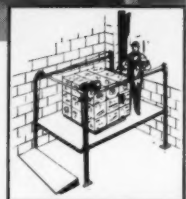
9-Y White Street, New York 13, N. Y.

Circle 74 on Reader Service Card

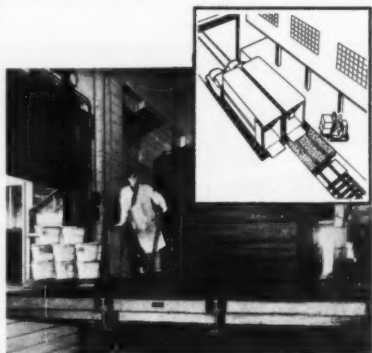
## GLOBE LIFTS SAVE TIME



## Electro-Loaders® speed unloading with Lift Trucks



Ground-level plants without loading docks use Electro-Loaders so that lift trucks can enter truck body for palletized loads, eliminate manual unloading. Electro-Loaders have capacities to 6000 lbs., lifts to 5' 10".



## Bridge Lift short-cuts traffic over rail spur

When spur tracks cut through floor areas, Globe Bridge Lifts provide direct access to all areas, eliminate long detours required to go around tracks. Two cylinder size shown carries 20,000 lbs., has lift of 4' 2". Models available to meet your requirement.



for complete information on GLOBE LIFTS. Globe Hoist Company, East Mermaid Lane at Queen Street, Philadelphia 18, Penna.

**GLOBE**  
**LIFTS**

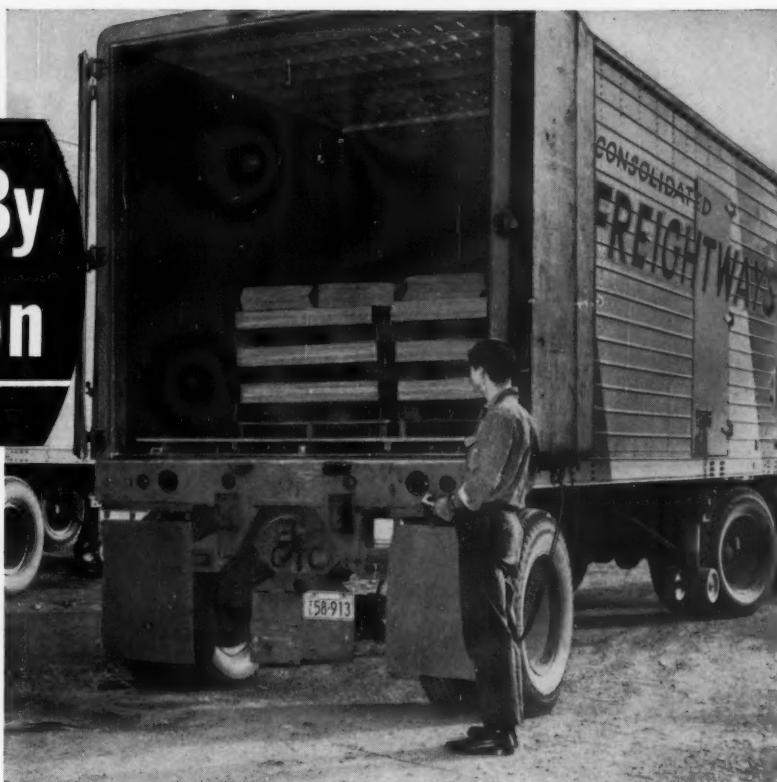
PLANTS: PHILADELPHIA • LONG BEACH, CALIF.

Circle 78 on Reader Service Card  
MATERIAL HANDLING ENGINEERING



# They Load By Pushbutton

*There's a*  
**WATSON-DeWitt**  
**MOTO-VATOR**  
*to fit your needs, too*



One of Consolidated Freightway's Moto-Vator equipped van trailers used for general cargo handling.

Performance-proved Moto-Vator models handle virtually all loading and unloading situations. With these powered floor conveyors in your truck, loads ride in and out at the touch of a button. No hand loading necessary, no need to run fork trucks in and out of van. You save time, trouble, and damage to cargo and equipment.

**MOVABLE FLOOR** Moto-Vator models use movable floor segments driven by a single drive chain.

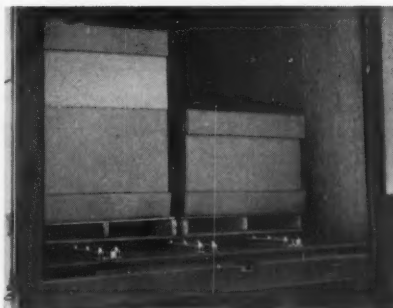
These handle cartons, drums, bales, containers, reels, sacks, bundles, carboys, unitized loads of all types. Consolidated Freightways uses this type.

**PALLET SUPPORT** Moto-Vator models use twin drive chains carrying aluminum pallet supports for specialized pallet operations. You can choose models for loading single wide pallets, or two pallets side by side.

**Model 2CP...**  
designed for  
handling wide  
pallets; dual chains  
are driven from  
common shaft.



**Twin pallet models;**  
available with  
synchronized  
or independently-  
powered drive  
chains if desired.



*Many Moto-Vator designs are readily available for special applications.  
For more details, write for free literature. Please address Dept. 120*

**WATSON**

**H. S. WATSON COMPANY**

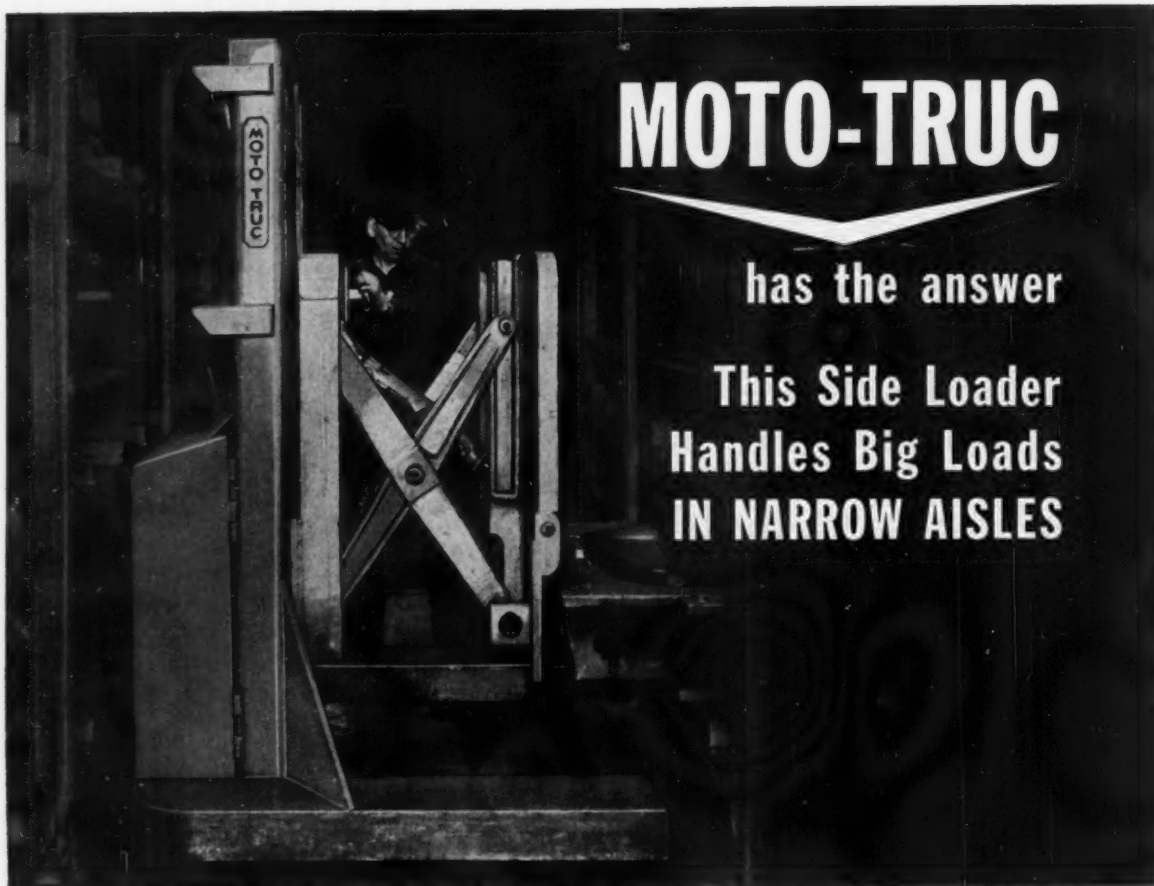
1316 67th STREET, EMERYVILLE 8, CALIFORNIA  
1606 LASKEY ROAD, TOLEDO 12, OHIO

Circle 160 on Reader Service Card

APRIL, 1960

20

97



# MOTO-TRUC

has the answer

**This Side Loader  
Handles Big Loads  
IN NARROW AISLES**

• Here's a solution to the problem of handling big bulky loads in narrow aisles. It's a Moto-Truc that stacks sideways. Forks are mounted on a pantograph to permit reaching out over the side—to put a load in a rack or to stack loads. Even long loads like carpet rolls, pipe or rod can be carried down aisles that are only inches wider than the truck itself . . . then quickly placed in storage.

Available for handling loads up to 2,000 pounds, the truck can be equipped with up to 30" reach and built for aisles only 12 to 14" wider than

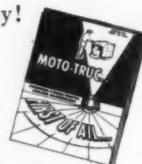
the load. Available in both walkie and small rider models.

Investigate this handling tool today!

**WRITE NOW!**



Get full information  
on this new MOTO-TRUC  
Walkie Side Loader.



## The MOTO-TRUC Co.

1955 East 59th St. • Cleveland 3, Ohio  
World's Largest Manufacturer Of Walkie and Small Rider Trucks



### POSITIVE POWER CONNECTION—another MOTO-TRUC design exclusive

The tough flexible cable which connects the battery to the motor gives positive assurance of full, uninterrupted power at all times.

MOTO-TRUC's flexible connection is maintenance-free and is impervious to the damage and wear so often experienced with connector rings and similar power transfer systems used by others. No repairs or costly replacements are needed.

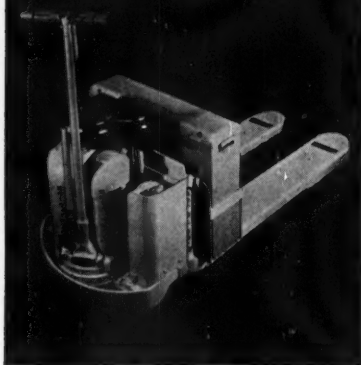
This is another example of design quality that makes MOTO-TRUC a better buy.

**The MOTO-TRUC Company**  
Cleveland, Ohio

Circle 113 on Reader Service Card

# MOTO-TRUC

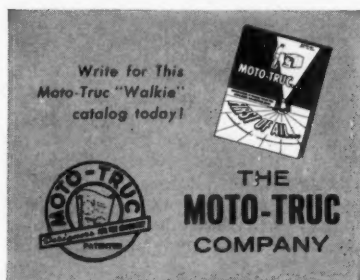
Leads the field in  
**"Walkie"**  
**Pallet**  
**Trucks**



**The toughest little walkie  
in the business**

■ Built to handle more loads at less cost, the MOTO-TRUC walkie pallet trucks is the most popular model on the market. Its ultra-simple construction means far less maintenance and greater dependability. Yet, in spite of its small size, it's built to take rough treatment and will give years of useful service on the severest jobs.

Moto-Truc walkie pallet trucks are available in 4,000 and 6,000 pounds capacity models with fork dimensions to fit any load.



1955 East 59th Street  
Cleveland 15, Ohio

Circle 114 on Reader Service Card  
**APRIL, 1960**

## USEFUL LITERATURE

(Continued)

device makes the feeder easily adaptable for recording, pacing, and controlling other equipment.

*Omega Division  
B-I-F Industries, Inc.*

Circle 408 on Reader Service Card

### How To Simplify Freight Car Handling

"Make Freight Car Handling Your New Economy Zone" is the title of this pocket-size, 32-page booklet. It shows cost-cutting versatility of Whiting's Trackmobile. How, in one minute, it's a truck running on rubber tires on the road, and in the next minute, it rolls across a railroad track, drops a separate set of wheels down on the rails, and is ready to take on freight car handling. Booklet also shows how the same unit can use its free time as a snow plow or material handling truck.

*Whiting Corp.*

Circle 409 on Reader Service Card

### Smooth Speed Control

Four-page brochure details the Acro-Smooth speed control used on the company's F-50T4 electric truck. It gives full specifications for the 4,000 lb capacity truck, along with diagrams, photographs, and detailed analysis of each main working part of the truck. The speed control is designed for safety and for longer vehicle life.

*The Elwell-Parker Electric Co.*

Circle 410 on Reader Service Card

### 200% More Storage In The Same Floor Space

Bulletin 5981 of Speedrack Material Storage News has over a dozen photographs of recent material storage rack installations. Company says you can get 200% more storage in the

### 16 MM Sound Film On Conveyor Systems

"Conveyors For Parts, Assemblies, and Packages" is a black and white film produced by the College-Industry Committee on Material Handling Education. Produced with the cooperation of The Material Handling Institute, Inc., it describes all types of industrial conveyor systems, past and present. Trolley, floor, gravity, free roll, endless belt, and slat are presented. The film costs \$90 to industrial organizations; \$65 to educational institutions. Rental cost is \$4 a showing. Contact: Herbert E. Farmer, Director of Services, Cinema Department, University of Southern California, Los Angeles 7, Calif.

same floor space with its drive-in Speedrack. Completely prefabricated, there is no drilling, no cutting, no waste. Company asks you to outline your storage needs, and its engineers will design a storage rack to handle your range of loads with complete safety, at lowest possible cost.

*Storage Products Corp.*

Circle 411 on Reader Service Card

### Vibration Inducers— 52 Sizes and Types:

Catalog lists that many, from the BD-10 (4½ ozs) to the 3,000 lb impact CCVP series hopper car shaker (72 lb.) Units come in five motive powers: pneumatic, electric, gasoline, hydraulic, or steam. This 38-page booklet provides engineering data, specifications, and a complete price list on the Vibrolator line.

*Martin Engineering Works*

Circle 412 on Reader Service Card

### A.W.A. Merchandise Division 1959-1960 Roster:

Available for warehousing and business organizations interested in the services of public merchandise warehousing industry. Roster lists names, addresses, area, telephone, and TWX members, executives for customer contact, and railroad service of members. The group specializes in storage and handling of commodities that do not require refrigeration for preservation.

*Merchandising Division  
American Warehousemen's Association*

Circle 413 on Reader Service Card

### Automatically Regulated Silicon Battery Chargers:

Each unit, in addition to being a charger, is also a battery tester. The ammeter shows the state of charge of the battery by the amount of charging current drawn. Company says there's practically no gassing during charge, eliminating corrosive fumes. Literature details MH models for 3-phase input, and BC models for 1-phase input bench or rack style.

*Christie Electric Corp.*

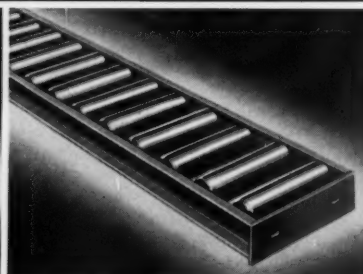
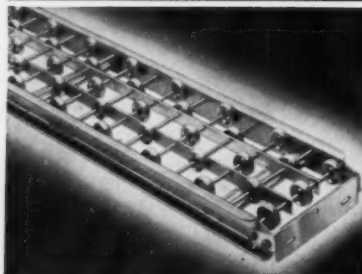
Circle 414 on Reader Service Card

### Wire Rope Fittings:

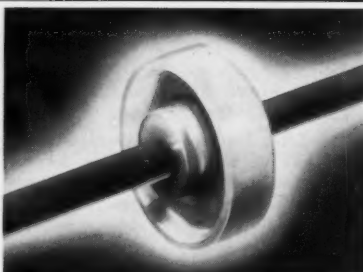
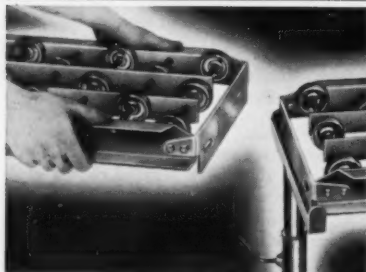
Catalog details the company's complete line, giving specifications and design features of each. Included is the Newco combination clamp and thimble which provides a simple, efficient wire rope coupling. It derives its extraordinary holding power from its basic design. Safety hooks, safety swivel hooks, safety shank hooks, adjustable sliding choker hooks, standard choker hooks, dual choker hooks, casing and choker thimbles, etc., are among the other products. Company



## Let Gravity Speed Your Loads...on Versatile Roll-or-Wheel BUSCHMAN PORTABLE CONVEYORS



Buschman produces every kind of conveyor system: wheel, roller, belt units; table-cable installations and overhead trolleys. The indispensable old work horse in countless plants, stores and warehouses is the Buschman wheel or roller portable that expedites packages large and small, heavy and light. Buschman portable sections are available from stock in suitable lengths and widths, straight or curved, 2-way or 3-way switch. And every length is equipped with exclusive Quick-Eez Couplings described below. Choice of rollers or wheels depends on weight and nature of package load. Free literature. See yellow pages for representatives, or write The E. W. Buschman Company, 4450 Clifton Avenue, Cincinnati 32, Ohio.



### QUICK-EEZ COUPLING

This exclusive Buschman feature is identical on both ends of every section; drops independently into slot on supporting stand, with maximum adjustment to gain correct fall. Quick-Eez is trouble-free, facilitates handling.

### BRAND NEW NYLON WHEELS

For any Buschman wheel conveyor, new Nylon Wheels with cadmium plated axles and *Galva-finish* frames are quiet running, corrosion free. Most useful under steam and water conditions: meat packing, poultry, fishery, etc.

# Buschman

## CONVEYORS

Complete Conveyor Systems for all Industries—Engineered, Manufactured, Installed  
Representatives in Principal Cities; See Yellow Pages

341

Circle 27 on Reader Service Card

## USEFUL LITERATURE

(Continued)

says overall features of its line are strength in design, safety, and longevity.

NEWCO Mfg. Co.

Circle 415 on Reader Service Card

### Powered Elevating Tailgate:

For 1½ ton and larger trucks and trailers. The Hide-A-Gate is ideal either for dock or floor loading. Has a push-type cylinder for greater lifting capacity. It's self-folding and unfolding, and is easy to install. It folds under the truck for dock-fork loading, allowing direct contact by body bumpers against the dock.

H. S. Watson Co.

Circle 416 on Reader Service Card

### Fork Truck Safety Posters:

"Think Safety!" is the theme of a series of 16 safety posters published by this company. Each measures 11 x 17 inches, ideal for bulletin boards in plants, warehouses, and shipping docks. Available free of charge in complete sets, they illustrate how accidents involving fork trucks occur and how to prevent them. Each was designed to emphasize the importance of safe driving practices by fork truck operators, in order to prevent injury to himself, to plant personnel, or damage to the material being transported, plant equipment, or to the truck itself.

Automatic Transportation Co.

Circle 417 on Reader Service Card

### Label Ideas in Action:

The label has hidden talents as a powerful sales persuader, says a 48-page booklet now available. It shows hundreds of labels, seals, and tags reproduced in full color. Many of the photos include case histories telling how the label boosted business. Also shows labels designed to aid handling, office systems, shipping procedures.

Allen Hollander Co., Inc.

Circle 418 on Reader Service Card

### Pneumatic Conveying:

A 16-page illustrated bulletin M-588 points out how pneumatic conveying systems can reduce plant operating costs and improve plant efficiency. High density (fluidizing type) and low density conveying systems and equipment are covered. Common installation arrangements are diagrammed. Photos show actual installations, basic equipment and accessories.

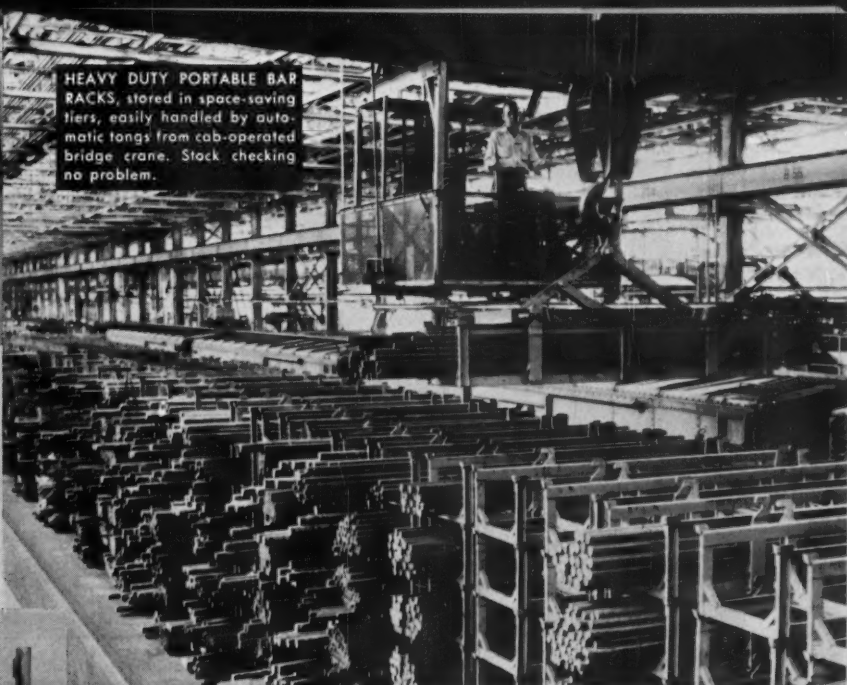
The Day Co.

Circle 419 on Reader Service Card





**STOCK CHECKER'S TRUCK,** designed for simple handling and pickup of large variety of items, with chart holder.



**HEAVY DUTY PORTABLE BAR RACKS,** stored in space-saving tiers, easily handled by automatic tongs from cab-operated bridge crane. Stock checking no problem.

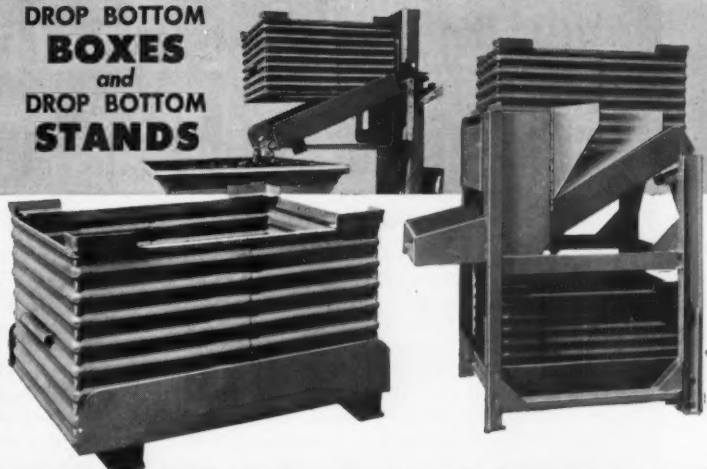


**ONLY  
2  
PARTS  
TO  
ASSEMBLE**

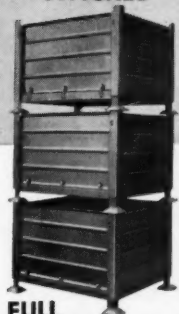
**NO  
BOLTING  
NO  
WELDING**

**P-S 60 STANDARD ADJUSTABLE STORAGE RACK** for almost every plant or warehouse use. Three standard size shelves, one standard panel.

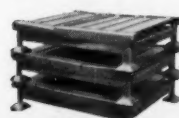
**DROP BOTTOM  
BOXES  
and  
DROP BOTTOM  
STANDS**



**STACKED**



**FULL**



**EMPTY** Saves Plant and Shipping Space When Not In Use.

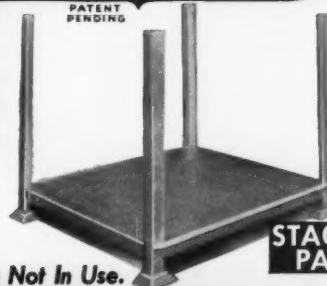


**CORRUGATED**

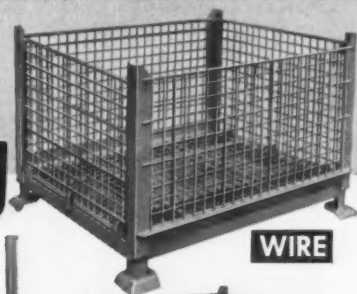
Circle 123 on Reader Service Card

**Stacking  
Folding  
BOXES**

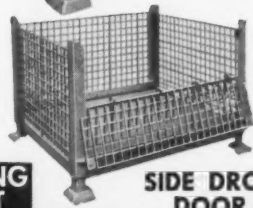
**PATENT  
PENDING**



**STACKING  
PALLET**



**WIRE**

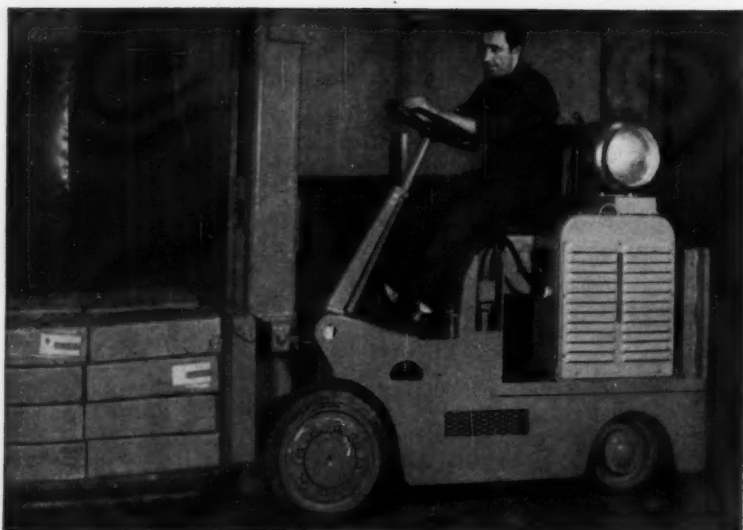


**SIDE DROP  
DOOR**

DESIGNED AND MANUFACTURED BY

**Palmer Shile Co.**

16012 FULLERTON AVENUE, DETROIT 27, MICHIGAN  
Offices in Principal Cities • Export Division—75 West St., New York 6, N. Y.

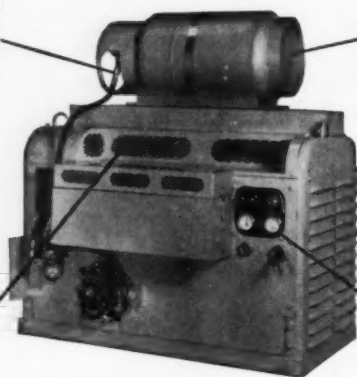


## Ready-Power LPG-Electric Power Unit for Sit-Down Trucks

### MODEL HA-3 FOR 4000-6000 LB. FORK TRUCKS

Now, get the advantages of full-time LPG-electric power for *any* electric, sit-down fork truck, regardless of make or model. Compact Ready-Power model HA-3 accommodates all seating arrangements . . . assures remarkably low-cost operation . . . minimizes objectionable fume problems. Compact LP-Gas cylinder is mounted on top of engine-generator housing for quick, easy interchangeability. Hinged cover and side plate give easy access to engine accessories; removable end plate permits service of generator. LP-Gas components are listed by Underwriters' Laboratories and comply with Factory Mutual recommendations. Write today for full information.

Flexible LP-Gas fuel lines withstand vibration . . . quick-disconnect coupling assures safe refueling.



LP-Gas cylinder is standard I.C.C. 33½-lb. or 43½-lb. capacity. A.S.M.E. tank is optional.

Recessed housing accommodates seating arrangement for all electric sit-down fork trucks.

Instrument panel is within easy reach of operator, protected against damage.

## READY-POWER

The READY-POWER Co., 3838 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

Circle 130 on Reader Service Card

## USEFUL LITERATURE

(Continued)

### Sectional Belt Conveyor Data:

Bulletin 458 describes the company's Pre-Engineered sectional belt conveyor. Literature features comprehensive technical data, lists advantages, and has an exploded view of the conveyor with all quality components highlighted.

Stephens-Adamson Mfg. Co.

Circle 420 on Reader Service Card

### The Latest For The Textile Industry:

Fork trucks and attachments designed particularly for cotton and textile handling are described in this 8-page brochure. Action shots show them at work in mills and warehouses. Drawings indicate construction and engineering features. Performance charts show lifting capacities and stacking heights of gas and electric models.

Clark Equipment Co.

Circle 421 on Reader Service Card

### Automatic Power Charger:

This battery charger is of the selenium dry plate type with forced air cooling, designed for lift truck batteries and other industrial applications. For 12, 24, 36 volt lead acid batteries, it has 100 ampere charging capacity. Company says dual transformers give better cooling. Bulletin 101A9 gives full information.

Motor Appliance Corp.

Circle 422 on Reader Service Card

### A-C Drawn Case Capacitors:

Bulletin GEA-6789 describes features of the capacitors used in air conditioning equipment and in a wide variety of other industrial applications. Equipment photos, charts, equipment and component dimensional diagrams, and rating and dimension tables are included.

General Electric Company

Circle 423 on Reader Service Card

### Why Tape Cartridges:

Cellophane tapes in individual cartridges are explained in a bulletin just published. The Tuck cartridges slip into a dispenser that's compact and colored to suit your taste. The roll can be changed in a second, and it's protected in the cartridge for its entire life. The bulletin lists the different Tuck tapes available, lists their characteristics, and prices.

Technical Tape Corp.

Circle 424 on Reader Service Card

# Steel Warehouse Handles 3500 Stock Items with "TRAK-RAK" Crane

## —Reduces Operating Costs...Speeds Service



1. "TRAK-RAK" Crane moving into aisle between double rows of racks. Racks are 20 ft. high. Distance from floor to underside of roof truss is 30 ft. Aisle width is 5 ft.-4 in.

Edgcomb Steel of New England, Inc. warehouses 3500 different items of steel, stainless steel, brass, and aluminum bar stock in an area 60 feet wide, 27 feet high, and 160 feet long.

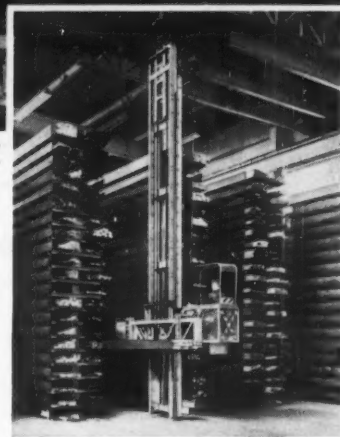
ONE man and a "TRAK-RAK" Crane serve the five double rows and two single rows of "Christmas Tree" racks which hold 2700 storage trays. Edgcomb processes approximately 2500 to 3000 orders per month, and the company reports very favorable reductions in operating costs and faster order processing and delivery.

Edgcomb's "TRAK-RAK" Crane has a traveling bridge (Photo 1) which spans the storage bay, and an overhead trolley from which is suspended an electrically operated rotating column equipped with a carriage for handling the storage trays. All operations of the crane and carriage, which rotates, moves toward or away from the racks, and raises or lowers on the column, are controlled by the operator who rides with the carriage. Safety switches prevent the column from running into a rack and permit full rotation only when the unit is safely beyond the end of the racks.

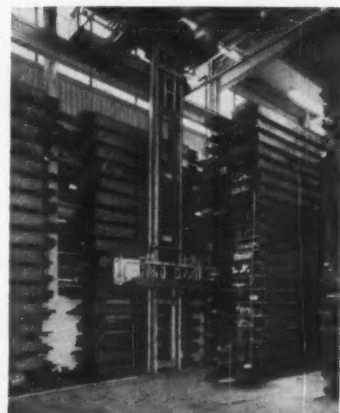
Hundreds of "TRAK-RAK" installations, designed to meet the user's particular requirements are in use today. They are handling many types of material and loads with great speed and economy. Specific advantages the "TRAK-RAK" System of vertical storage and handling brings to the user are:

1. Maximum utilization of the cube to permit storing and handling more material in less floor area.
2. Faster material movement in and out of storage.
3. Reduction in personnel and lower labor costs.
4. Improved safety, better housekeeping, precise inventory control.

*Take the first step toward faster, more efficient material storage and handling now. Write for complete details on "TRAK-RAK." Chicago Tramrail Engineers are available to discuss your handling problem with you at any time—and at no obligation to you.*



Crane with operator, who rides with carriage, emerging from aisle with loaded stock tray.



Picking up or depositing stock trays on the rack is a fast, safe operation. Trays and rack sections are color coded for quick location and identification.



**CHICAGO TRAMRAIL CORPORATION**

1322 SOUTH KOSTNER AVENUE

CHICAGO 23, ILLINOIS

Specialists in the design, manufacture and installation of material handling systems for steel warehouses and other industries  
Circle 50 on Reader Service Card





Powell Flow-Matic system in action on packaging line at Goerlich's, Inc., Toledo, Ohio.

## Handling 50 million parts a year with POWELL'S Exclusive Flow-Matic\* System!

Goerlich's Inc., working with Toledo Society of the Blind, stores, assembles, and packages 50 million muffler parts a year—using Powell's unique Flow-Matic materials handling system. Fast, simplified handling method that can save up to 50% in space handling areas. *Bulletin FM* gives all the details—write for it.

TM\*

Unique Powell Flow-Matic boxes in storage area at Goerlich's, Inc. Easily handled and stacked.



**THE POWELL PRESSED STEEL COMPANY**  
100 ERIE STREET • HUBBARD, OHIO

*The most complete line of material handling equipment.*

Circle 126 on Reader Service Card



## USEFUL LITERATURE

(Continued)

### Pulleys That Run True:

Here are pulleys with the crown right in the pulley steel. The S. D. series is available in diameter to 6 inches, in various gauges of tubing, with a wide variety of hubs. Advantages: trouble free performance, good belt tracking, less belt damage, less maintenance, less down time due to pulley failure.

*Pulley Division  
The Chantland Co.*

Circle 425 on Reader Service Card

### Truck Attachment Saves \$8000:

A fork truck with a rotating clamp attachment saves \$8000 a year in handling small parts at an automotive plant. Field report No. 12-D1-37 shows how the clamp empties containers of nuts, bolts, washers and similar small parts into bulk-storage hoppers.

*Clark Equipment Co.  
Industrial Truck Div.*

Circle 426 on Reader Service Card

### Heavy Loads in Corrugated

A case history bulletin tells how a foundry switched to corrugated pallet boxes for loads of castings weighing up to 1,500 lb. Also gives ideas about how you can save money by converting to corrugated in other industries.

*Mead Containers, Inc.*

Circle 427 on Reader Service Card

### Need Help On Conveyor Troubles?

A pocket-sized card is available which affords a quick method for locating probable causes of conveyor troubles. Specific cures are listed. Called a "Conveyor Belt Trouble Shooter" it is one of a series of aids offered for engineering, purchase and maintenance of conveyor belts.

*United States Rubber Co.  
Mechanical Goods Div.*

Circle 428 on Reader Service Card

### Help in Packaging with Tape

Two "Packagineering" brochures give practical, money-saving tips for all packaging departments. One is on kraft sealing tapes, the other on reinforced tapes. They give suggestions for loading, handling, and closure of cartons, 6-strip and 2-strip sealing, and cost comparisons for various types of packaging.

*Mid-States Gummed Paper Div.  
Minnesota Mining & Mfg. Co.*

Circle 429 on Reader Service Card





## HOW MANY WAREHOUSES CAN YOU FIND IN YOUR PLANT?

Sometimes you can't see the warehouses for the machines. Most plants have no trouble identifying at least two areas where warehousing goes on. The first that come to mind are the receiving and shipping areas.

But how many unrecognized warehouses are you operating? It could be quite a few. When the flow of material through any plant is analyzed, build-ups of work are frequently found before and after each operation. These build-ups of material, in themselves, create warehousing problems. And, big or small, these "hidden" warehouses may be costing you more than you realize.

In almost every plant, these little warehouses are likely to be out of phase with where they should be, and how big they should be for maximum flow efficiency. Sometimes the most practical arrangement is a simple storage rack. Other times overhead storage on Rapistan-Keystone trolley conveyor is the answer. Sometimes greatest efficiency can be gained with a more complex live storage Flow Rack equipped with mechanical indexing and selection devices.

In any case, by streamlining and simplifying the operation of your hidden warehouses, you can gain better utilization of space and control of inventory first-in-first-out use of materials, cut down on spoilage and damage costs, and improve your entire handling pattern.

Rapistan engineers specialize in recognizing these less obvious areas, and developing modern storage conveyors for just such problems. They've developed some new concepts of "stop-and-go" storage that have brightened the profit picture for thousands of manufacturers, as well as for wholesalers and retailers. If the "hidden warehouse" in your plant is not as efficient as the rest of your operations, or if you just suspect that it isn't, circle No. 10 on the Reader Service Card.



**RAPISTAN FLOW RACK IS THE HEART** of this mechanized selection system used in the shipping department of one of the world's largest record manufacturing plants. A remote-controlled belt conveyor takes cartons from any hatch in the rack, conveys them to a checking station en route to the shipping dock.

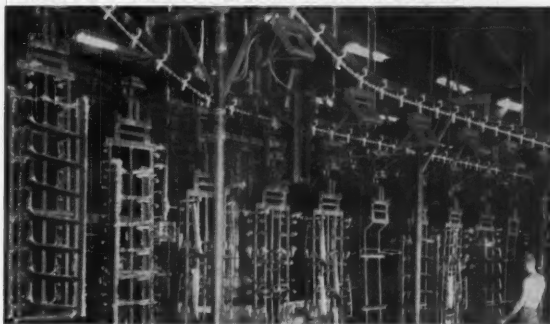


**WAREHOUSING OF PARTS AND COMPONENTS** goes on right at the point of manufacture in this plant. Flow Rack, positioned at the perimeter of the work area, holds the optimum quantity of all parts used here. It's loaded from the rear, without interfering with production.

**WRITE FOR THIS HANDBOOK** of materials handling ideas, describing all the latest Rapistan conveying equipment, plus lots of application information, suggestions and tips for conveyor system engineering. Circle No. 11 on the Reader Service Card.



### R-K AUTOMATIC TRANSFER PUTS NEW PROFITS IN OVERHEAD HANDLING



Saved — \$6,000.00 a year on rack maintenance.  
Saved — 40% reduction in direct labor.  
Saved — large area formerly used for storage.  
Gained — 70% increase in plating production.  
That's the profit-boosting record of benefits realized by a large midwestern plating plant, after modernizing production with an overhead conveyor system engineered by Rapistan-Keystone, featuring an unusual For more information, Circle No. 12 on the Reader Service Card.

**Rapistan**®  
**CONVEYING EQUIPMENT**

The RAPIDS-STANDARD CO., Inc.  
701 Rapistan Building, Grand Rapids 2, Michigan



## Good lift trucks have one thing in common . . . **CASCADE ATTACHMENTS!**

It's what's up front that counts! That's why men who know attachments best select CASCADE to handle paper rolls, oil drums, concrete pipe, cotton bales . . . canned, boxed or bagged goods. Just about any load you can name gets a lift out of CASCADE, the world's leading attachment specialists.

CASCADE attachments will pick up your products *and profits*. Sold through all lift truck manufacturers and dealers.

Need a new attachment in your industry? Let us know, because . . . *the business end of a lift truck is our business.*



Sales and General Offices: P. O. Box 7587, Portland 20, Ore.  
Plants: Portland, Ore.; Springfield, Ohio; Amsterdam, The Netherlands

# cascade manufacturing company

Circle 42 on Reader Service Card



## NEW EQUIPMENT SECTION



Circle 301 on Reader Service Card

### Tire Lets Boy Do Man's Job

Even the manufacturer is amazed by the performance of the new Palmer wheel. It rolls so freely that one man can move a load that used to take 3 men. Or if your equipment is electric powered, a battery charge will last nearly twice as long. A recently developed solid rubber tire compound makes the difference. In official tests it took a 250-lb draw-bar pull to move 4,000 lb on ordinary wheels. These were then removed and new wheels substituted on the same bearings. The new wheels needed only 44 lb draw-bar pull. Strangely enough, the new rubber compound has high resilience that smooths out bumps. High resilience usually requires greater tractive effort. The boy in the picture really did pull the 4,000 lb load easily.

Palmer Mfg. Co.



Circle 302 on Reader Service Card

### Wide Tape Dispenser

Light-weight, easy to use hand dispenser for pressure sensitive tape takes rolls up to three inches in width. Construction is of aluminum; there is a cut-off blade for glass filament reinforced tape. Replacing a roll takes but a few seconds, and involves only two moving parts.

A. J. Gerrard & Co.



Circle 303 on Reader Service Card

### Crane Spots Delicately

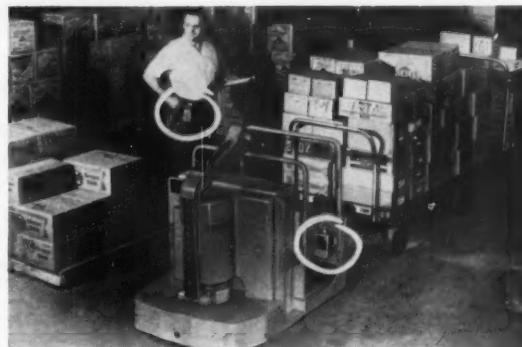
Precision controlled crane lifts and spots 2½ tons accurately to 10 thousandths of an inch. Power lift boom moves in three planes. It extends 6 ft, raises 9 ft and swings crosswise. Herculift M-10, driven manually or by a rolling power unit, handles and loads tools, dies and fixtures. Optional propelling unit shown has fluid coupling and a deadman brake. Brake releases when motor starts. Steering is said to be easy. Acceleration controls are in handle and operate in any handle position. Crane weighs 1400 lbs, measures 57" long and 32½" wide. Wheels can be plastic or rubber tired.

Colson Corporation.

### Radio Hastens Picking

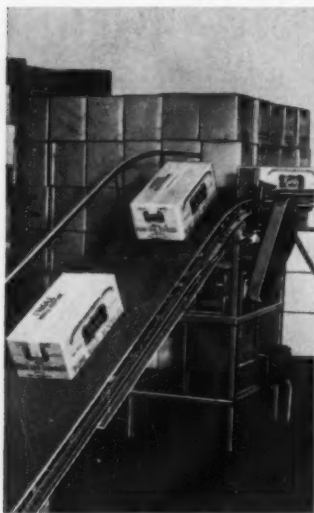
Remote radio control of Transporter tractor model UTE eases and speeds order picking. The man selecting orders stays in one area while he fills his trucks. He doesn't have to go to the tractor to move it. An all transistor system gives him control within 100 ft. He can hold the miniature battery powered transmitter in his hand, slip it in a pocket or clip it to his belt. A pushbutton moves the tractor in first speed; it stops when you let go. The rugged receiver mounts on the tractor in a steel box. Each has its own frequency, a number will work in the same building. A pivoted handle converts the tractor to a walkie to make easy jockeying in tight spots. The operator rides to the shipping dock at normal speed.

Automatic Transportation Co.



Circle 304 on Reader Service Card

# "HI-CLIMBER"®



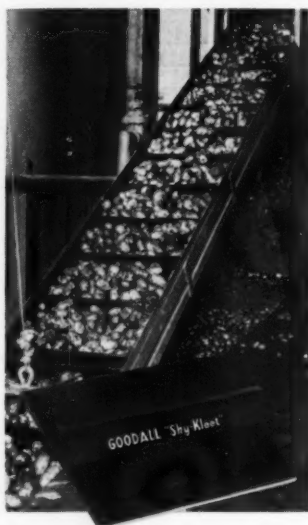
*For a Steady,  
Up-Hill Flow  
of Packaged  
Goods...*

Heavy-duty belting for incline conveyors handling cartons, boxes, baskets, bags, cans, etc. Special diamond-impression surface will keep packages in place on grades up to 40°—no slipping, sliding or jamming to halt continuous transfer. Widths up to 44".

# "SKY-KLEET"®

*For Efficient  
Movement of  
Small Items*

Specially designed rubber cleats available on Goodall Conveyor Belting used for handling food products, small packages and parts, stampings, minerals, chemicals, etc., on fixed or portable conveyors. Cleats are molded into the belt—never come loose. Spaced 12" apart unless otherwise specified.



**"If it's GOODALL, it MUST be Good!"**

Contact Our Nearest Branch for Details and Prices

Standard of Quality—Since 1870



HOSE • BELTING • FOOTWEAR • CLOTHING  
AND OTHER INDUSTRIAL RUBBER PRODUCTS

## GOODALL Rubber Company

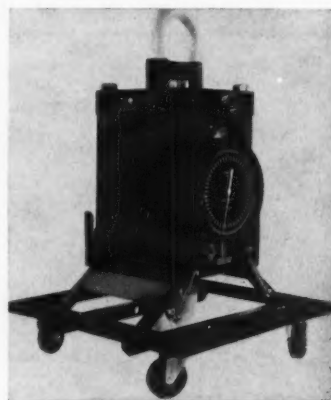
GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.  
BRANCHES AND DISTRIBUTORS THROUGHOUT THE UNITED STATES.  
IN CANADA: GOODALL RUBBER CO. OF CANADA LTD., TORONTO.

Circle 67 on Reader Service Card

## NEW EQUIPMENT SECTION

### Hoists Controlled Precisely

The HYDRA-SET offers precision control of crane and hoist loads. Installed as a link between the hook



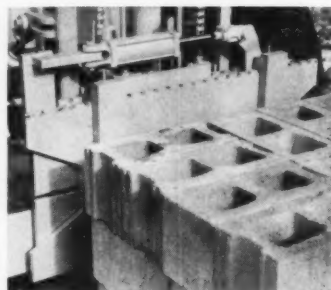
Circle 305 on Reader Service Card

and the load, it is used in machinery and equipment assembly, precision mating of large parts, maintenance, etc. The unit is entirely self-contained; requires no air or hydraulic lines. Operation is independent of the hoist or crane system.

Mefco Sales and Service Corp.

### Side Shift Spots Load

A new side-shift attachment for better accuracy in spotting palletized or concrete block loads is offered by



Circle 306 on Reader Service Card

J. I. Case for M-420 wheeled fork lifts. It moves three inches right or left controlled by a dash-mounted lever, and is factory or field installed. Removal or reinstallation is easy.

J. I. Case Co.

### Coded Tapes Run Stencil Machine

A stencil cutting machine that needs no operator has reached the prototype stage. Called Stencilmation, it reads punched tape or cards to make shipping room stencils. It can be coupled to automatic office data processing systems. Stencils become a by-product of type-writing the order copy. They can be one to four lines,





Too bad, indeed. *Good* for you, though, that Roebling Slings do exist to make *your* materials-handling job simpler, safer, swifter.

That goes for virtually anything that needs to be lifted; there's a Roebling Sling made to do the job. For special needs, Roebling Engineers will design and make a sling to meet them exactly.

Whatever the type—standard or special—you'll find they embody advanced construction features that certify safe, steady service and stability under load.

To give you the complete Roebling Sling Story, we offer you a 48-page catalog. It con-

tains information on All-Purpose Slings, Flat-weave Slings, Roegal® Cable-Laid Slings and a full line of end fittings. It's the ready reference for simplified materials handling. Just ask for A-938. Roebling's Wire Rope Division, Trenton 2, New Jersey.

Of course, if you want any immediate sling help or information, your Roebling salesman or distributor is anxious to be of service.

**ROEBLING** 

Branch Offices in Principal Cities  
John A. Roebling's Sons Division, The Colorado Fuel and Iron Corporation

Circle 134 on Reader Service Card



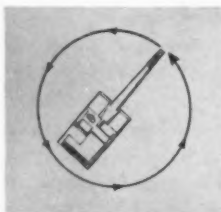
**SILENT HOIST  
KRANE KAR**

**SAVES  
\$478.03 EVERY MONTH**

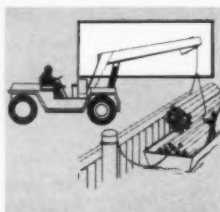
says V. JAMES DeNAPLES

Technical Services Foreman  
Norma-Hoffman Bearings Corp.

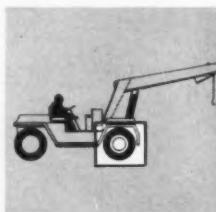
"This versatile yard crane simplifies our materials handling operations, cutting travel trips and saving us a considerable amount of work and time. Our KRANE KAR speeds unloading of incoming materials, transports and stacks them at storage..." **RESULT: Monthly net savings—\$478.03!**



**360° BOOM ROTATION**—Hydraulic Crane revolves on heavy-duty, double-race ball-bearing turntable. Special manifold permits continual rotation and simultaneous, smooth, positive control of hoisting, topping, telescoping.



**GREATER WORKING REACH**—Boom is pivoted well forward to provide working reach of entire boom length! High boom underclearance permits efficient handling of bulky loads in box cars, trailers, etc.



**MAXIMUM SAFETY**—Dual traction tires means high flotation and maximum protection against tire blow-out upsets. **Bonus Capacity**—Hydraulic outriggers step up working capacity to 24,000 lbs.

**2 SIZES: MODEL FAX—12,000 lbs. • MODEL FAY—20,000 lbs:**

**ALSO AVAILABLE:**

**KRANE KAR—180° SWING BOOM**—Mechanical Geared and All-Hydraulic Models. **5 Sizes:** 1½, 2½, 5, 10, 12½ ton capacities.

Literature Available:

On 360° Swing Boom—Bulletin No. 99 On 180° Swing Boom—Bulletin No. 79

**SILENT HOIST & CRANE CO.**  
**BROOKLYN 20, N. Y.**

Circle 143 on Reader Service Card

## NEW EQUIPMENT SECTION



Circle 307 on Reader Service Card

cut from various sizes of roll or sheet stock, with automatic cut-off when complete.

Marsh Stencil Machine Co.

### Carts Save Trips

Up to 500 lb can be handled easily by one man using a TRIP SAVER stock cart, says the manufacturer. The



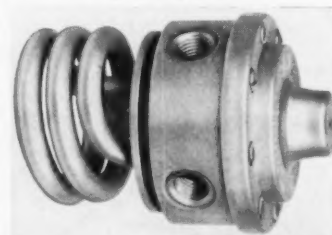
Circle 308 on Reader Service Card

cart has three trays for greater loading of bulky and package items. There is a 16" x 30" size for narrow aisles or a 24" x 36" size for large loads. Construction is all steel.

Bay Products Div.

### Better Heat Control

The Zenith Vaporizer is said to apply all of the heat to the liquid stage of the fuel. Much better heat transfer for better control of outlet gas is claimed. Improved pressure regulation




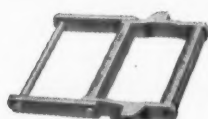


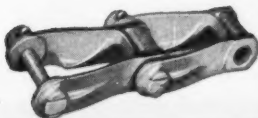


Circle 309 on Reader Service Card

# SELECTION CHART

for triple-tested Moline Chains\*

Here is a quick, easy reference chart for comparing the seven most popular Moline Chains. Are you familiar with all the attachments available... the range of sizes... and all their applications? This chart will help you compare their size, capacity range and various uses. It's a part of the new, illustrated "Moline Conveyor Chain Manual and Design Engineers' Handbook" which is available now to help you specify the right chain for your requirements. Write today for your copy.

CHAIN TYPE & NUMBER	APPLICATION AND INSTALLATION	ATTACHMENTS	PITCH RANGE IN INCHES	ULTIMATE STRENGTH IN LBS.
 Detachable Chains—25, 32, 33, 34, 42, 45, 50, 51, S-51, 52, 55, 57, 62, 67, 75, 77, 78, 88, 95, 103, 108, 114, 124	Widely used throughout industry, conform to "manufacturers' standard" and available in a wide variety of sizes. Many attachments make this type versatile and adaptable to any light to medium-duty conveyor service.	A-1-2-3-12-110 C-1-5-8-15 D-3-4-5 E-1 F-2-8-16 K-1-2-3-5-40-73-345 H-1-2 K-1-2-3-5-40 L-2 M-1-3 R-1-2 S-1 Scraper 1-29	.902 to 4.063	700 to 17,000
 Pinle Chains 400 class. Light weight Pinle. 700 class.	Serviceable, long-wearing, moderately-priced chain for general elevating, conveying and power transmission service for drives at low and intermediate speeds with moderate loads. In "400" lightweight and "700" class types.	A-1-12-115 D-5 E-1 F-2-5-16 G-1-6-19 K-1-2 M-1 F-2-5 F-22-6" F-2-22-8" A-2-42 K-1-2-720-A-2-730 720-M-1 M-1-2	1.375 to 4.720	4,200 to 22,000
 H-Type Mill H-60, H-62, H-74, H-75, H-78, H-82, H-85, H-87, H-95, H-124	Designed primarily for heavy drives and transfer conveyors in saw mills and pulp and paper mills but widely used throughout industry. Strong and rugged, provided with wearing shoes for stiffness and long service life.	A-1-12 F-4 G-1-6-19-48 H-1-2 K-1-2 M-3 R & L RR	1.654 to 4.000	7,000 to 30,000
 Combination Type Mill Chain 6104, 6110, 8116, 8480	Designed for the same applications as regular H-type conveyor chains and refuse chains but has larger diameter rivet, greater ultimate strength for more rugged duty in general drag conveyor service applications.		6.00 to 8.00	42,000 to 56,000
 Combination Chains—C-55, C-77, C-102B, C-102½, C-110, C-110-C, C-111, C-111-C, C-131, C-131-C, C-132, C-132-C, PW-132, C-188, MW-188	Very rugged and serviceable for use in bucket, transfer and many other types of conveyors. Widely used in cement, chemical, lumber, quarrying, mining industries. Available in pin and cotter assembly or riveted construction.	C-3-132 RF-12 F-2 G-6-19 K-1-2-3 LL-25	1.631 to 6.050	9,000 to 50,000
 Dairy Conveyor MC-33	Extensively used in dairy and bottling industries, designed for both horizontal and lateral turning. Detachable construction, interchangeable with manufacturers' standard 4250, available only in extra strength Promal.		2.500 only	12,000
 Ley bushed Chain—823, 825, 830, 844	Developed for hard, rugged service under extremely abrasive and other adverse conditions. Used extensively in conveying or elevating sand, gravel, cement and in similar industries where service demands are rigid.	K-2 F-2	4.00 to 6.00	19,000 to 40,000

Write today for your free copy of the Moline Conveyor Chain Manual and Design Engineers' Handbook.



Leaders for  
60 years

## Moline Chains

MOLINE MALLEABLE IRON CO., St. Charles, Illinois  
Specializing in the manufacture of chains

\*Call your nearby Moline dealer today for help on your chain problem. Complete design service available for special chains or unusual applications.



Model 210 A-W Hydraulic Crane hoists 5600-lb. packaging machine to second story of Boston bakery.

## A-W crane doubles riggers' capacity!

"Our Austin-Western hydraulic crane serves two or three rigging crews daily, 6 days a week, in different parts of the city. It has plenty of speed and mobility for heavy traffic. Our records show that it actually doubles the work capacity of our crews. Customers like it too. They often request it because it works faster and more efficiently and as a result costs them less hourly rental.

### Fantastically low maintenance

"The A-W is versatile. It frequently does jobs which used to take a heavier crane renting for \$150 a day. Maintenance costs have been fantastically low. Downtime near zero. It's an easy-to-operate piece of precision equipment;

tops for dependability and performance. Only one man is required to operate this crane. I don't see how we could do business without it any more"—*Jack Shaughnessy, Shaughnessy and Ahern, Boston machinery movers and riggers.*

### To lift, carry or place

Austin-Western now offers a complete line of lift, carry and place equipment in five models with capacity ranges from 5 to 11 tons. Chances are good that an A-W hydraulic crane will save time and money for you in your operations. Why not let us tell you exactly how much you could expect to save with one. Ask your nearby Austin-Western distributor or write us today.

# Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

**BALDWIN · LIMA · HAMILTON**

Power graders • Motor sweepers • Road rollers • Hydraulic cranes



Circle 8 on Reader Service Card

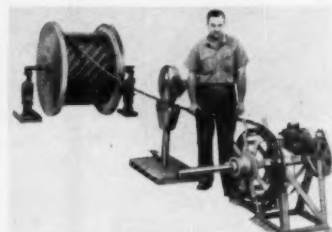
## NEW EQUIPMENT SECTION

results. The new unit will interchange in the field with all prior models in the same housings. It requires no adjustment.

*Zenith Carburetor Division*

### New Reeler and Coiler

Tremendous pulling power is claimed for the S & R heavy duty Wire Rope Reeler and Coiler. It will reel and coil from the largest standard



Circle 310 on Reader Service Card

master storage reels. Drive is electric with completely enclosed, oil immersed gear reducer. A 20 inch diameter coiling head gives rope speed of 89 fpm allowing safe operation by any inexperienced person. Economy without sacrifice of any convenience feature is stressed. Machine will take reels up to 38" diameter, 2500 lb.

*Sherman & Reilly, Inc.*

### Staples Caps in Sleeves

The Sword Hand Boxer staples unsupported corrugated material. It has a stationary staple-clinching anvil



Circle 311 on Reader Service Card

and a floating staple guide to hold the material together as it is fastened. Typical uses are stapling insert caps in corrugated sleeves and stapling telescope carton lid flaps together.

*International Staple & Machine Co.*

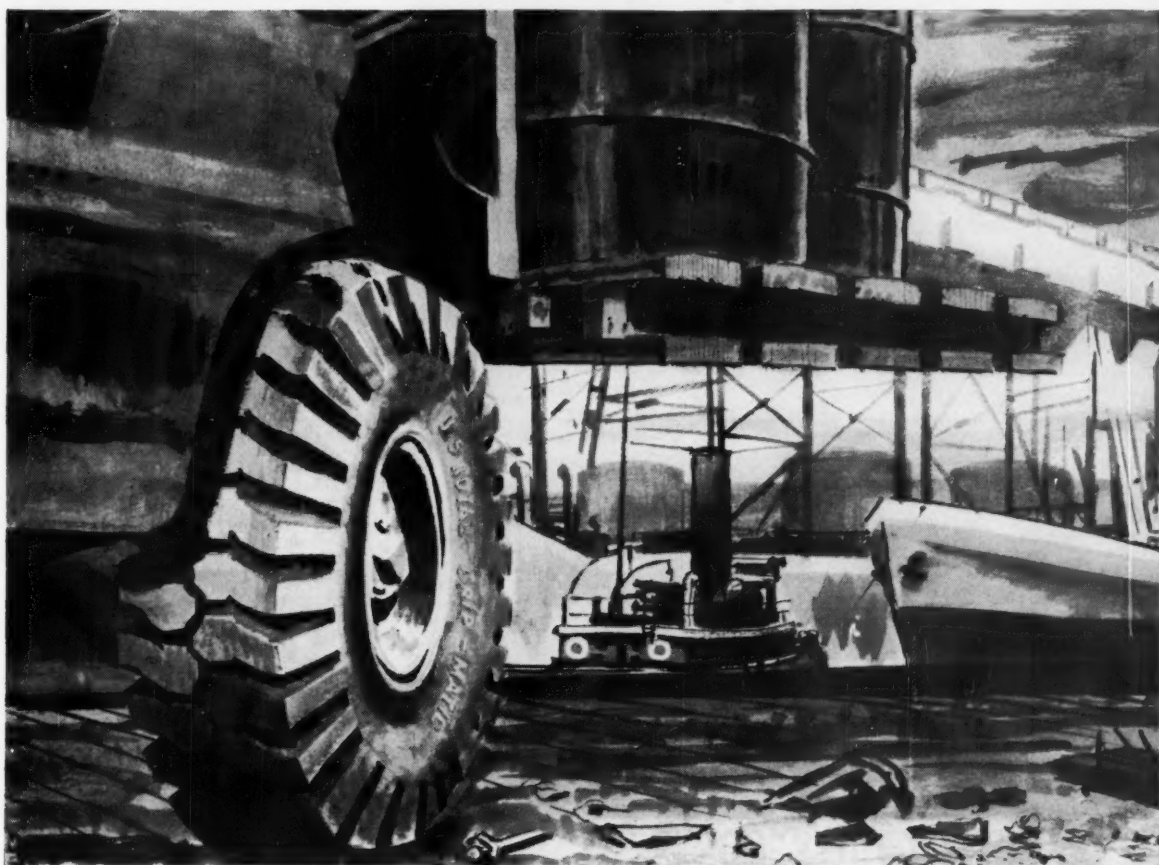
### Economy Variable Pulley

Here's an economy variable-speed pulley developed for original equipment or low-cost replacement. It comes in five sizes from fractional to 1 hp, with speed ratios to 2.8 to 1.



# S.R.T.\*

licks the major causes of tire failure!



## CUTS, RUPTURES, PENETRATIONS DEFIED with U.S. ROYAL GRIPMATIC S.R.T.

The SRT\*—Steel-Reinforced Tread and Sidewall—in U.S. Royal Grip-Matic Tires provides the toughest industrial pneumatic ever!

As you can see, a thick layer of rubber containing thousands of short steel filaments forms a virtually impenetrable mat that guards tread and sidewall against cuts, ruptures and penetrations. You enjoy less tire repair, less vehicle downtime, increased tire life. And you get better traction, too, for the U.S. Royal Grip-Matic gives you sure grip on slick ramps and yard areas!

Don't forget to specify "U.S. ROYAL" on your new equipment.

# U.S. ROYAL TIRES



**United States Rubber**

Rockefeller Center, New York 20, N. Y.

Circle 155 on Reader Service Card



Mr. W. J. Shalley  
Industrial Tire Dept., U.S. Rubber  
Rockefeller Center, New York 20, N. Y.  
Please rush me your complete industrial tire manual.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City & State \_\_\_\_\_



## GO-GETTER CUTS COSTS IN HALF; MAKES JOB SAFER

A leading chemical plant faced with the double explosion hazard of ethylbenzene fumes and aluminum chloride dust, solved its material handling problems — and saved money in the process — through the use of Revolvator's new fork lift trucks labeled Type Ex by Underwriters' Laboratories for Class 1 Group D explosion hazardous areas.

Previously, two men with a hand truck were required for this operation. Since the introduction of the Explosion Proof Go-Getter, one operator easily charges the hoppers in a safe manner with a minimum effort. "What used to be a dangerous, disagreeable job has now become a simple task," says the plant manager.

The explosion proof Go-Getter, available in 12 standard models, is but the latest development in Revolvator's better than a half century of experience in materials handling equipment covering standard walkie lift trucks, hand lift trucks, portable elevators and related equipment.

## REVOLVATOR CO.

8739 TONNELE AVENUE, NORTH BERGEN, N. J.  
SINCE 1904

Circle 131 on Reader Service Card

### NEW EQUIPMENT SECTION



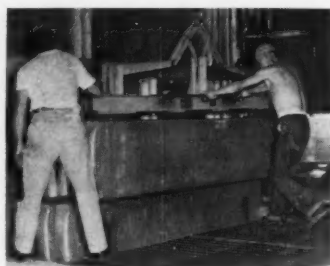
Circle 312 on Reader Service Card

Installation is easy as an ordinary V-belt drive, yet adjustment is accurate over a wide speed range. Construction features include curved pulley faces for full belt contact, high ratio for small face diameter, and positive lubrication.

*Lovejoy Flexible Coupling Co.*

### Grab Picks up Slabs

Metal slabs are handled easily by Mansaver's style 1692 Ingot Grab. Fully automatic, it alternately grips



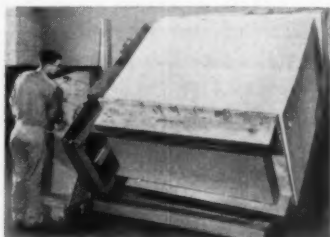
Circle 313 on Reader Service Card

and releases the load. No man is needed when placing the slab at rest except to guide it into position. A feature of the grab permits rotation of the ingot 90 degrees from the horizontal.

*Mansaver Industries, Inc.*

### Skid Loads Inverted Fast

The Model ST-5 Skid Turner turns over 5,000 lb skids in 5 seconds. It does away with hand turning in any



Circle 314 on Reader Service Card

industry handling and shipping sheet stock. Liquid products inverted to avoid settling or sedimentation are easily handled in skid loads rather

than in small units by hand. Fully mobile, machine handles any type skid from 28" x 38" to 52" x 76", and load heights from 24" up to 74" exclusive of skid. A special side structure supports load during turn; there are no clamps to induce squeeze damage.

*Southworth Machine Company*

### Racks From Pipes

Tube-Strut clamps and ordinary one inch pipes are all that you need to make heavy-duty storage racks. The



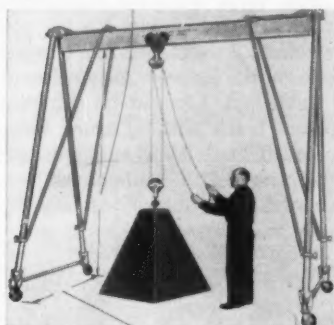
Circle 315 on Reader Service Card

system is highly adaptable and gives maximum use of space at minimum cost. Wood shelves may be added.

*Tube-Strut Corp.*

### Portable Gantry Crane

This portable gantry has 6 feet of height adjustment and a wheel tread adjustable to the narrowest ties. Its



Circle 316 on Reader Service Card

I-beam is made of aluminum for lightness and safety. Trolley travels the full length of the beam. Legs fold against the I-beam, resulting in a compact unit for hauling or storing. Models are available in heights up to 17 feet and 15 foot spans.

*B. E. Wallace Products Co.*

### Jet Towing Tractor

The Clarktor 225 tractor has both two-wheel and four-wheel drive, au-



Circle 317 on Reader Service Card

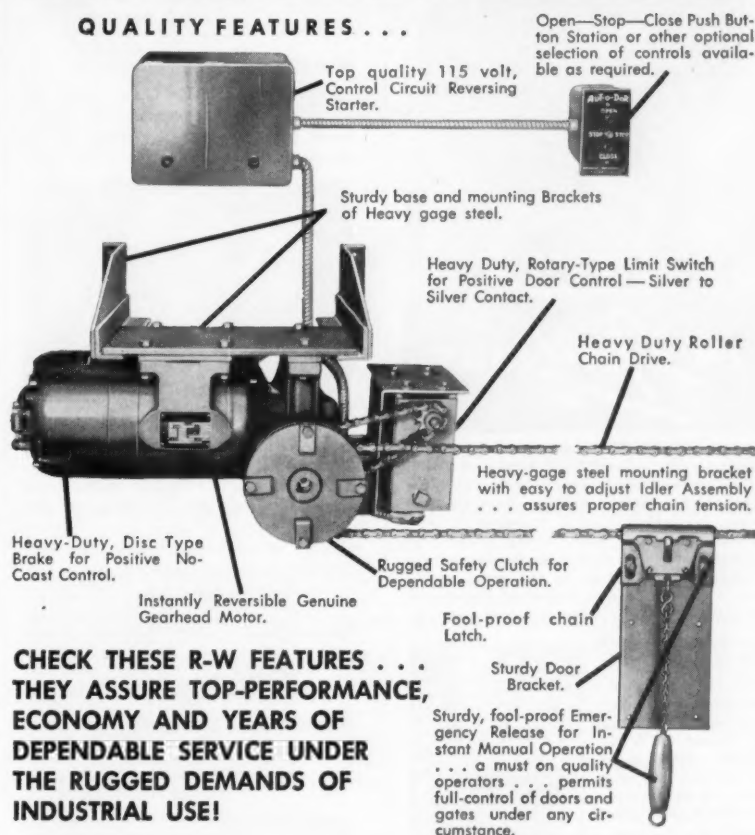
# R-W ELECTRIC OPERATORS

## for doors and gates that...

### SWING — SLIDE — FOLD



### QUALITY FEATURES . . .



**CHECK THESE R-W FEATURES . . .  
THEY ASSURE TOP-PERFORMANCE,  
ECONOMY AND YEARS OF  
DEPENDABLE SERVICE UNDER  
THE RUGGED DEMANDS OF  
INDUSTRIAL USE!**

The unit, above, is typical of the complete line of R-W Electric "AUT-O-DOR" Operators . . . each contains every desirable feature necessary for long, trouble-free operation. R-W Electric Operators are not converted residential units but are specifically designed to meet the demands of hard, constant industrial use. Available in a complete line to meet your specific requirements . . . power units range from 1/8 H.P. to 15 H.P. All components are the best available . . . all are nationally distributed and serviced. R-W Electric Operators will increase plant efficiency and employee comfort and safety . . . smooth automatic door operation—assures fast, easy movement between departments . . . saves time, heat and conditioned air.



## Richards-Wilcox

**MANUFACTURING COMPANY**  
ELECTRIC OPERATOR DIVISION

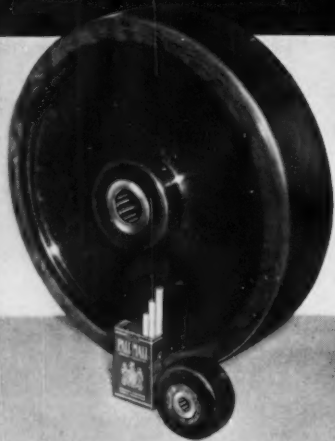
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Write for complete information . . . request your free copy of Catalog No. 200.



# TEXITE WHEELS-



IN *Any* SIZE

Now... for the first time you can have long wearing, easy rolling, floor protective Texite wheels in *any size*! Texite wheels are those tough, high capacity industrial wheels made of heavy, macerated canvas, impregnated with phenolic resin and press formed under high pressure and temperature. Immediately available in diameters from 3 1/4" to 16", tread widths from 1 1/2" to 4" and capacities all the way to 8000 pounds. Plain, roller or sealed bearings.

## Texite Wheels with Laminated Tread

More durable than regular Texite, highly resistant to chipping or fraying. Shock or impact resistance is 35% greater and safe loading capacities are increased 25%. Available in same broad range of sizes as regular Albion Texite Wheels.



## Big New '59 Catalog

Albion's big, new '59 Catalog of Industrial Casters and Wheels is ready for your use and convenience. Write for your personal copy—today!

ALBION  
INDUSTRIES,  
inc.

Albion, Michigan

Circle 9 on Reader Service Card



## NEW EQUIPMENT SECTION

automatic transmission, and three types of power steering. Company says it has the shortest turning radius of any tractor designed to handle jet-powered commercial airliners. It has up to 30,000 lb drawbar pull, and can haul planes at speeds over 10 mph. Over-all height is only 68 inches. Over-all length is 173 inches, and wheelbase is 80 inches. The three methods of steering are: four wheel coordinated steering, two wheel front steering, and crab steering (moving sideways.)

Industrial Truck Division  
Clark Equipment Co.

## Holdbacks Stop Reversal

Two holdbacks have been developed to protect workers and equipment from reversal of conveyors and elevators. One is a standard type



## Circle 318 on Reader Service Card

and the other, a totally-enclosed type. The holdback is installed on the head shaft, allowing the conveyor or elevator to stop at any time without danger of backward travel. The unit has rollers which wedge between the drum and wedge-plate when power is interrupted. The unit, however, releases freely when forward travel starts.

Stephens-Adamson Mfg. Co.

## Rack Saves Time

Bartender racks save time in storing rolled bars, tubing and pipe. Vacant space is immediately available



## Circle 319 on Reader Service Card



**DOCK  
BOARDS**

with **EXCLUSIVE**  
**automatic extending**  
**HINGED LIP!**

Now trucks can load and unload with greater speed and efficiency. No operator required... no levers to operate, project, bend or maintain. With the Auto-Mechanical Dock Board hinged lip is *automatically* extended. As it moves down, the lip rests in position on truck bed. Lip can be retracted from truck without truck being moved. Dock board automatically adjusts to either side of the horizontal plane for canted beds.

Ramp length from 6' to 10'

Up travel with lip fully extended from 20" to 34"

Up travel with lip down, from 7" to 20"

Pit—12" or 24" depending on down travel required

Choice of three releases

Assembled and tested, ready to operate when delivered.

## Complete line of Auto-Mechanical Dock Boards include:

- Truck Actuated Boards • Hinged Lip Boards
- Railroad Boards • All-weather Shields
- Metal Face "Shock" Dock Bumpers

For information or name of representative, write or call:

**Auto-Mechanical  
DOCK BOARD, INC.**

500 N. Stanwood Rd. • Columbus 9, Ohio

Circle 2 on Reader Service Card

**MATERIAL HANDLING ENGINEERING**

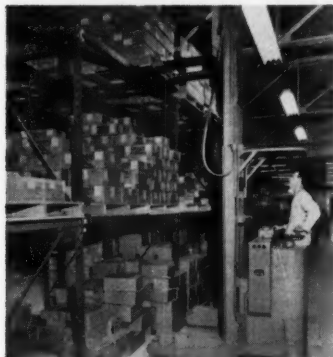


to the hoist. Telescopic extensions make loading and unloading single or bundled stock possible at any level. Unstacking upper tiers isn't necessary. Standard components make racks to handle stock to 20 feet long, in 2½, 4 and 5 ton bundles. Total capacity is 50 tons.

*Cady Metal Fabricating, Inc.*

### Fork Unit Retracts

A special fork attachment which can be retracted allows use in aisles no wider than the length of truck



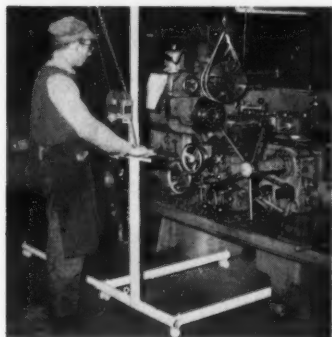
Circle 320 on Reader Service Card

and forks. The unit can be attached to a riding-type electric tiering truck. The fork is hydraulically extended to pick up a pallet, lift it over the load wheels and then retract it into the truck. The reverse is used to unload. Truck capacities run to 3,000 pounds.

*Lewis-Shepard Products Inc.*

### Crane Has Winch

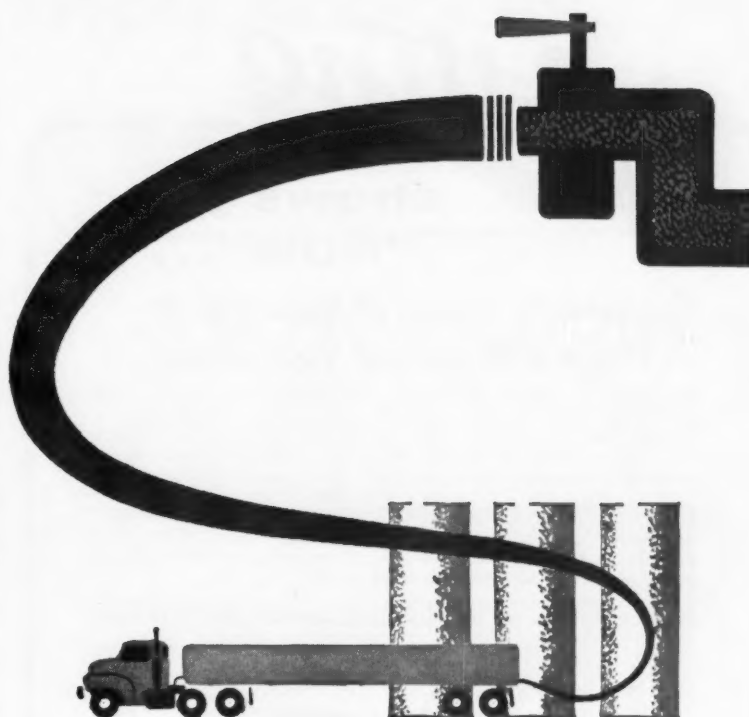
A junior crane positions and transports loads up to 300 pounds. It is powered by a hand winch with a



Circle 321 on Reader Service Card

mechanical ratio of 30 to 1. Telescoping masts give a total lifting height of 9 feet 6 inches. The company says it performs jobs formerly needing several men and reduces lost time due to injured backs and muscles.

*Thern Machine Co.*



## NEW M-D GEARED P.T.O. BLOWERS.. NO BELTS-NO PULLEYS

for tractor mounted conveyor systems



Now a compact, 3-lobe M-D blower fits *inside* tractor frame... weighs only 165 lbs. Geared-in-head blower (2 to 1 or 2½ to 1 ratios) connects directly to truck P.T.O.—no belts or pulleys—develops 15 PSIG continuous air flow or up to 18 PSIG in surges.

M-D blowers operate at wider pressure and speed ranges than any other rotary positive blower. Capacities of 22 production models range from 50 to 4,000 CFM, pressures to 15 PSIG single, 70 PSIG multi-stage.



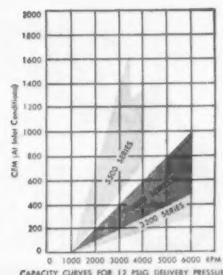
For full information write

**M-D BLOWERS, INC.**  
RACINE, WISCONSIN

A SUBSIDIARY OF



**MEHLE-GOSS-DEXTER, INC.**



# Nutting

shows you  
"HOW"...

**the widest choice of floor trucks  
in the world can cut your costs!**

For regular or "special" design floor trucks it pays to talk to Nutting first. Here's why: no other company makes more models, sizes or combinations of equipment than Nutting. Many times items which you may find listed as "specials" with other makes are regular equipment in Nutting's complete line. As a result you get "custom built" trucks at production line prices. You not only get overall lower prices; you also get the benefit of 68 years of experience, design "know-how" and modern manufacturing skills. To save valuable hours of your time and get the right equipment for your plant, talk to a Nutting representative first, for all your floor truck needs!

**Nutting makes over 1000 products, here are just 16 of them**



For appliances and finished products



Wagon trucks up to 10,000 lbs. capacity



All types of dollies for boxes & cases



For sub-floor & overhead drag lines



Trailers — up to 7,000 lbs. capacity



CASTERS — all types

WHEELS — demountable rubber tired, solid rubber, plastic & metal



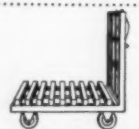
Shelf and tray trucks



2 wheelers for freight



Steel & aluminum frames for cases & cartons



Drag line trucks & trailers for palletless handling



Non-tilt platforms — Wood & steel frames



Shelf trucks for sub-assemblies



Dollies for cylindrical & odd shaped items



Triform & box trucks for packages & bundles



"Auto-Load" barrel & drum trucks



Tilt style platforms — Wood & steel frames

Dollar for dollar, feature for feature Nutting is your best floor truck buy. Write for your free copy of new Junior Catalog 59G.

## Nutting



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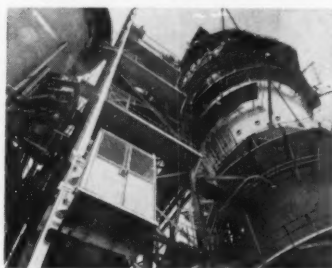
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COMPANY NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_

Circle 121 on Reader Service Card

## NEW EQUIPMENT SECTION

### Car Rides 'H' Beam

An elevator has been developed to ride a vertical monorail "H" beam sections of any height. The car has



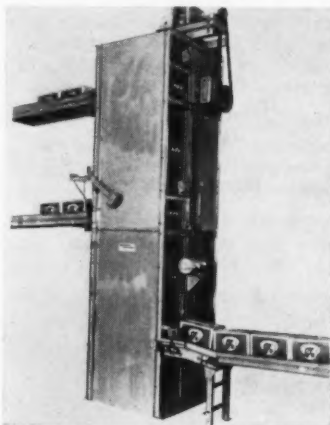
Circle 322 on Reader Service Card

a 4 by 6 foot platform. It can carry 2,000 pounds or eight passengers. The lift can exceed 500 feet at 70 feet a minute. The elevator can be utilized as a packaged transportable unit, to service various installations by moving the car and as a permanent installation.

Hawkeye Products Corp.

### 20 Cases a Minute

In index-type case vertical conveyor can handle up to 20 cases a minute. It receives, spaces, trans-



Circle 323 on Reader Service Card

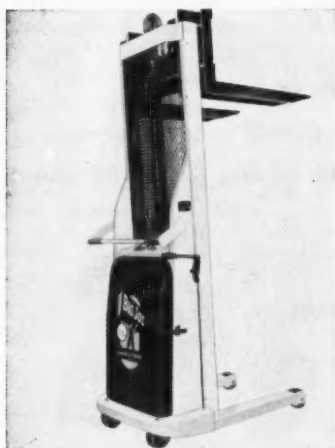
ports and discharge individual packages. Either one or two packages a carrier can be handled at a vertical speed of 90 feet a minute. The unit occupies 4 by 4 feet of floor space plus 2.25 by 2 feet for automatic feed belt. A wide variety of packages, up to 180 pounds per carrier, can be handled.

Alvey Conveyor  
Manufacturing Co.

### Truck Features Economy

"The 299," battery-powered hydraulic fork and platform lift truck, is designed with 1,000 pounds ca-

capacity. It is named after its price. The truck is used for handling appliances, air conditioners, boxes, barrels, drums and similar loads. It in-



Circle 324 on Reader Service Card

cludes a 12-volt industrial battery and self-contained charger. It has complete bearing control throughout. Its lifting height is 57 inches although additional models will have heights to 87 inches.

Big Joe Manufacturing Co.

#### Outdoor Fork Lift Truck

Engineered to go in mud or snow, the American Pacer combines the advantages of an indoor/outdoor vehicle.



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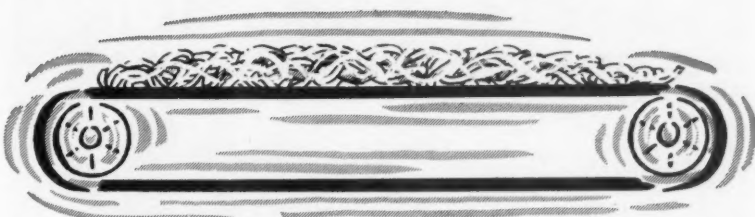
Designed so that the greater the load, the greater the traction, its big tires give the kind of soft stability you need to cross rough ground, spur tracks, timbers. Has 6,000 lb rated capacity at 24 inch load center. Has 10 ft 2 inch lift. Units are equipped with 73 BHP, Model F-226 Continental engines. Speeds up to 30 mph allow you to move rapidly from site to site. Can also be towed easily at road speeds. Supercharged hydraulic system gives full speed lift at all times.

American Road Equipment Co.

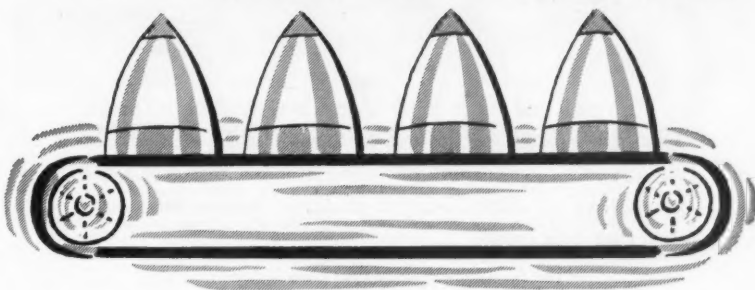
#### New Steel Box

A standard size all-corrugated steel box 33" x 48" top and bottom, 24" deep is offered by Palmer-Shile. Construction is all-steel welded. Square corners give maximum rigidity and

## FROM NOODLES



## ... TO NOSE CONES



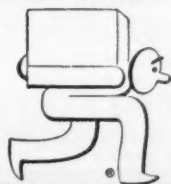
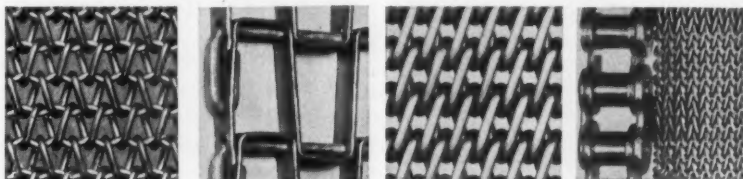
*You can depend on*

### ASHWORTH METAL PROCESS BELTS to carry the load

Regardless of size or delicacy of handling required during process, there is an Ashworth Metal Process Belt that will convey your product safely, economically through its various processing operations.

There is an Ashworth Metal Process Belt to meet every requirement of continuous product flow . . . whether that product be animal, mineral or vegetable . . . whether it must be conveyed up hill, straight away or around corners. Chances are your need can be met with a standard Ashworth design; but, where analysis of service requirements indicate special design for specific application, Ashworth Engineers will "job-engineer" the correct belt for that job.

Engineering versatility plus the finest plant facilities in the industry insure quality woven into every Ashworth Belt.



Write direct for technical literature covering the complete family of Ashworth Belts. No obligation, of course.

**ASHWORTH BROS., INC.**  
WINCHESTER, VIRGINIA  
Sales Offices in Principal Cities

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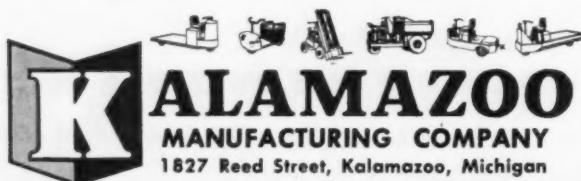
## SAVES 625 MAN-HOURS IN 5 MONTHS FOR GOODYEAR

**Kalamazoo Speed Trucks move men, materials, equipment at lowest cost**



You'll find direct dollar savings with Kalamazoo Speed Trucks in endless applications. Five models provide low-cost maintenance . . . transport everything from one man to a 4,000 pound load . . . climb 20-degree grades . . . turn in little more than their own length.

Write for specifications and case histories.



**How To Save Time, Reduce Risk of Accident when handling 2000 lb. dies**  
**USE** • Battery Electric Lift Truck with two-way hydraulic die puller



Dies which weigh up to 2000 lbs. are easily moved into and out of presses and transported to work benches or die storage racks. Two way electric hydraulic die puller moves dies on and off platform. No other truck saves floor space like a Walkie-Worklifter.

**ECONOMY Walkie-Worklifter**  
4524 West Lake Street, Elmhurst 8-9110  
Chicago 24, Illinois

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**NEW** Top Quality...Low Price  
**FULLY HYDRAULIC PALLET TRUCKS**

**\$350<sup>00</sup>**  
F.O.B. CHICAGO



**CHECK These Features**

- 3 1/4" Lowered Height
- 5" Lift
- Light Weight
- Accurate Steering
- Short Wheelbase
- Quality Construction

BT24 (2400 lb. Capacity) . . . \$350

BT44 (4400 lb. Capacity) . . . \$395

Both models available in 20" and 27" widths; 36" 42" and 48" lengths. Specify when ordering.

• WRITE-WIRE-PHONE •  
(Dealer Inquiries Invited)

**Industrial Hdlg. Equip. Co.**

1223 W. Monroe • Chicago 7, Ill.

Phone MOnroe 6-8554

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## NEW EQUIPMENT SECTION

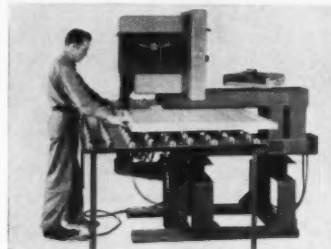
interior space. Stacking pockets permit tiering to any height. Four-way entrance for fork trucks is a design feature.

*Palmer-Shile Company*

Circle 357 on Reader Service Card

## Nailer Has Extended Reach

An automatic nailing machine with extended throat reach is yours with the Atlas-9 Model Auto-Nailer. With



Circle 326 on Reader Service Card

it you can nail crating and inside cleats on large panels, etc. Standard models have throat reach of 30, 40, and 50 inches; larger models built to specifications. The machine makes and drives up to 3 nails a second. You can adjust nail length from 1/2" to 2 3/4", blunt or needle point.

*Auto-Nailer Co.*

## Weights Less, Holds More

An extra-long dump trailer package gives haulers the security of a full frame, yet is light enough to meet



Circle 327 on Reader Service Card

bridge laws in individual states. Secret is weight distribution between dump body and chassis. The 28' bodies are mounted on a 31' chassis for payload up to 43,000 lb. Dump bodies come in corrugated steel or aluminum.

*Hercules Steel Products Co.*

## Stencil Ink in Colors

Five fast-drying colored inks—red, blue, yellow, white and green—for use in Stencil-matic rollers are available to label metal or porous surfaces. Capillary action of the roller prevents ink building up on stencils making them



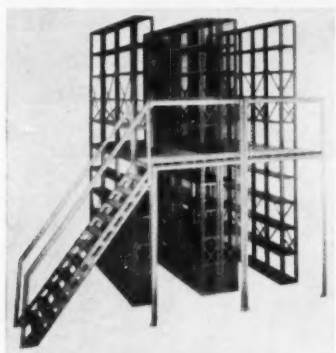
last longer. Lighter, less expensive stencil board can be used.

*Bostitch, Inc.*

Circle 358 on Reader Service Card

### Catwalks Double Shelf Area

Up to 100 percent more available shelf space in the same floor area is possible with a floor grating system.



Circle 328 on Reader Service Card

Shelving can be extended as ceiling height permits; non-skid steel catwalks and stairway allow access. Modular design aids custom fitting at low cost. Components can also be used to build mezzanine floors at a cost less than for timber construction.

*Equipto*

*Aurora, Illinois*

### Poly Bags Protect Bulk

Heavy gauge polyethylene bags can protect your bulk shipments when used as liners for barrels,



Circle 329 on Reader Service Card

drums, cartons, or burlap bags. They're easy to load, seal, and handle. They're completely impervious and contamination proof, and you can reuse them to cut costs. They're particularly suited for chemicals, foodstuffs, etc.

*The Dobeckmun Co.*

### Stitcher for Occasional Users

If you need a mechanized box stitcher but lack the volume to justify production line equipment, the Scotch Heller is for you. It's a small foot-operated stitcher that operates fast and efficiently, takes cartons up to 31" deep.

*Heller Industrial Fastener Div.*

Circle 330 on Reader Service Card

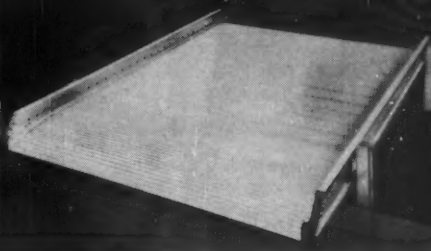
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**light!**

one man can handle it

**strong!**

takes the heaviest loads



## NEW portable WHITELIGHT MAGNESIUM DOCKBOARDS & BRIDGES

- **STRONGER & LIGHTER**—takes heaviest loads—made from ZK60, super-high strength-to-weight ratio magnesium alloy . . . assembled with hi-strength aluminum alloy rivets . . .
- **Easy-rolling, non-skid TRAILER-TYPE FLOOR**—made of integrally stiffened, fluted, interlocked, extruded sections.
- **Exceptionally strong, rigid SIDE RAILS**—complete wheel confinement . . . comfortable gripping for easy lifting and mobility.
- **4 unique, easily adjustable SPACERS**—extra long for complete stability.

**DISTRIBUTORS: INQUIRIES INVITED**

WHITELIGHT PORTABLE EQUIPMENT DIVISION

**WHITE METAL ROLLING & STAMPING CORP.**

122 Moultrie St., Brooklyn 22, N. Y. Phone: EVERgreen 9-4134

Plants: Warsaw, Ind., Brooklyn, N. Y., North Walpole, New Hampshire

One of the World's Largest Producers of Magnesium Alloy Mill & Finished Products.

Available with standard or heavy-duty curbing & flooring. Lengths: 3 1/2 to 10 feet . . . Widths: 3 to 6 feet. Special sizes, types, longer lengths, greater widths, larger capacities, made to order.

**WRITE, WIRE, PHONE NOW** for complete information.

## IDEAS . . . from STORAGE RACK HEADQUARTERS

. . . new manual showing how prefabricated, fully adjustable SPEEDRACK stores more of nearly everything in the same space . . . at less cost! Request your copy, today!



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CORPORATION**

4410 Oakton St., Skokie, Ill.

**speedrack®**

Circle 148 on Reader Service Card

## HOW TO INCREASE STORAGE WITH EXISTING FLOOR AREA

- USE**
- Narrow aisles
  - High racks or bins
  - Battery Electric Lift Truck



In this modern plant racks are 15 feet high and aisles are 45" wide. Finished goods are moved from packing tables to storage with an Economy Battery Electric Worklifter. No other truck saves floor space like a Walkie-Worklifter.

**ECONOMY Walkie-Worklifter**

4524 West Lake Street, Etebrook 8-9110  
Chicago 24, Illinois

Circle 60 on Reader Service Card

## NEW EQUIPMENT SECTION

### Self-Contained Lift Tables

For manufacturers with a handling problem involving long, and bulky or large, light loads. Company has added the LP Series of scissor-type, hydraulic-powered lift tables to simplify lifting, feeding, and work-positioning of long loads for machine, process, or assembly operations. Models range from 1,000 to 6,000 lb capacity. Platforms range from 38 inch minimum

width to 65 inch maximum width; from 7 ft 0 inch minimum length to 18 ft 0 inch maximum length. Collapsed heights range from 9½ inch minimum to a 12 inch maximum. Vertical platform travel available up to 40 inch, but where required, can extend to 60 inches. The LP tables have no superstructure, are completely self-contained.

*Southworth Machine Co.*

Circle 331 on Reader Service Card

### Air Moves The Load

While the principle in construction of Air Tables is standard, there are

no standard table sizes. Your own requirements for greater system efficiency will determine table sizes and shapes — even triangular or round if required. One of the most practical aids to easy station-to-station movement of paper, film, foil, and board packs is a Clark-Aiken Air Table installation. A very slight push by hand of the packs and they ride with an air glide. Literature shows typical installations.

*The Clark-Aiken Co.*

Circle 332 on Reader Service Card

### Electronic Tape Dispenser

This gummed tape dispenser is designed to deliver from 9" to 60" by electronic controls with two easy set



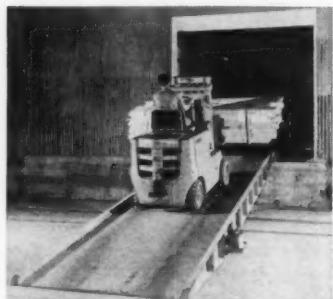
Circle 333 on Reader Service Card

tape lengths, each instantly interchangeable. Hardened self-sharpening tool-steel shears cut kraft or reinforced tape with no adjustment. Will handle tape from 2½ to 3 inches wide at rate of 40 inches per second. Plastic water bottle, thermostatically controlled heater, dual brushes, foot switches and printing attachments are other features.

*Diagraph-Bradley Industries, Inc.*

### Bridge on Wheels

An all steel bridge on wheels for use in yards and warehouses is yours



Circle 334 on Reader Service Card  
in the Lifetime Yard Ramp. You roll it into position on 16" rubber tires

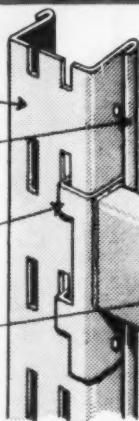


#### THE UPRIGHT

Exclusive to RidgU-rak — full length external column flanges — lock against lateral movement.

Improved — double hook and adjustable slot method of connection.

Box Stringers adjustable on 4" increments — designed for specified loading.



#### THE STRINGER

Only RidgU-rak has the full length external flanged column and adjustable double hooks and slots. This exclusive method of erecting sturdy rack systems is common to the complete line of RidgU-rak material storage systems. Only 2 basic parts are used—no bolts, nuts or tools required.



Outline your storage rack needs.

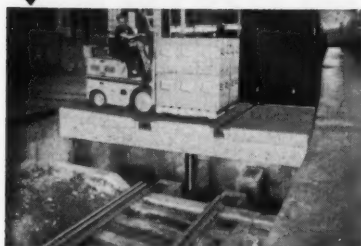
Write for Catalog 107-D

**BERNARD GLOEKLER NORTH EAST CO.**  
NORTH EAST • PENNSYLVANIA

Ridg-U-rak Selective Storage Racks • Drive-In and Drive-Thru Pallet Racks • Reel Racks  
Adjusto Racks • Custom Built Pallets • Skids • Hand Trucks • Work Benches and Specials

Circle 73 on Reader Service Card

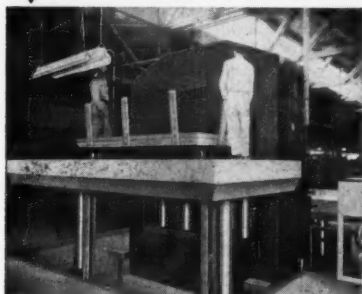
↓ **SPAN A TRACK**  
to speed plant traffic



↓ **LOWER A TRUCK**  
for faster loading and unloading



↓ **FEED A MACHINE**  
with greater economy and efficiency



**LEVELATOR LIFTS**  
handle heavy loads at lower cost

Operating on economical oil-hydraulic power, Rotary Levelator Lifts can be used wherever heavy objects must be raised or lowered. Standard models with 6,000 and 12,000-lb. capacities are designed for a wide variety of uses and are stocked for immediate delivery. Special Levelator Lifts in any capacity to several hundred thousand pounds can be engineered to your requirements. Simplicity of design and operating mechanism makes installation easy and practically eliminates any maintenance expense.

Write for Catalog RE-203



Manufactured by

**ROTARY LIFT COMPANY**

Division of Dover Corporation  
1145 Kentucky, Memphis 2, Tenn.  
Canadian plant at Chatham, Ontario

Circle 135 on Reader Service Card

APRIL, 1960

that raise and lower hydraulically. Lengths from 25' to 26' so that incline never exceeds 10 degrees. All decks are 70" wide with checkered steel plate for good traction in all weather. Stringers prevent trucks from running off sides. Easy to maneuver.

Elizabeth Iron Works, Inc.

**Collapsible Wirebounds for Liquids**

A combination of wirebound octagonal drum and inner polyethylene liner makes an ideal collapsible, re-



Circle 335 on Reader Service Card

turnable shipping container for almost any liquids including corrosives, inflammables, etc. They come in 5, 15, 30, and 55 gallon sizes. The 30 gallon size is shown here. The 55 gallon size has a built-in pallet

**Store MORE  
in Less  
Floor Space  
WITH**

**Weld-Bilt  
PORTABLE ELECTRIC  
ELEVATORS**

You convert storage space to more profitable production operations — with high-stacking Weld-Bilt Portable Elevators! Easily moved, push button controlled, with automatic top-and-bottom limit controls, available in single or double telescopic, or hinged types. Capacities 500 to 4000 lbs. Write for Bulletin No. 1055.



**WEST BEND EQUIPMENT CORP.**  
MATERIALS HANDLING ENGINEERS

335 Water Street • West Bend, Wisconsin  
Circle 162 on Reader Service Card

**MAINTENANCE  
floor to ceiling!**

with

*Vanguard*

Self-Propelled

**SHOP-VAN**



Model 210

**TOTES A TON** of tools, parts, supplies, on the job . . . to the job.

**CONVENIENT AND EFFICIENT** . . . no trudging back and forth from job to supply depot for tools or parts.

**WORKSHOP ON WHEELS** . . . mount bench grinder, drill press, pipe-vise, etc. on thick steel table top for on-the-spot repair, maintenance or assembly.

**WELDING EQUIPMENT** can be towed by the Shop-Van for fast, portable service, repair and assembly.

**TELESCOPIC WORK PLATFORM** . . . completes usefulness of Shop-Van. Ideal for overhead maintenance and assembly.

**HEAVY, UNITIZED ALL STEEL** welded construction, steel top, 16 drawer cabinet, two sliding-door cupboards.

write today for free catalog

*Vanguard*

**MANUFACTURING COMPANY**

1908 E. 66th St. • Cleveland, Ohio

Circle 157 on Reader Service Card



# AMERICAN Safeway

## PORTABLE ELEVATING TRUCKS for any stacking job

From 46" to 130" lift



STANDARD  
MODELS  
priced from

\$190<sup>00</sup>

to

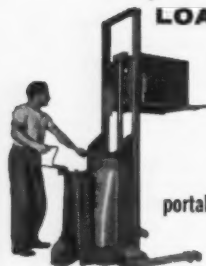
\$855<sup>00</sup>



Your crew can do twice the  
handling work for  
the same payroll cost

... and to take the heavy work  
and heavy costs out of  
HORIZONTAL HANDLING

### AMERICAN LOAD-JOCKEY



... the new drive  
attachment for  
portable elevating trucks

MATERIALS-HANDLING DIVISION  
*The American Pulley Company*

4200 Wissahickon Ave., Philadelphia 29, Pa.

AMERICAN SAFEWAY TRUCKS—

by the makers of the famous American Pressed-Steel  
Hand Trucks



Circle 6 on Reader Service Card

## NEW EQUIPMENT SECTION

base. All are approved by MCA — ICC. Binding wires and staples are double-dipped galvanized steel, making the outside as corrosion-proof as the inside. You get unlimited stacking height. When dropped they don't deform, nor does the liquid escape. Sizes up to 500 gallons will be available soon.

Package Research Laboratory

### Attachment Is Versatile

A fork truck attachment has six major parts that permit it to do a variety of jobs. The Lift-A-Pliance



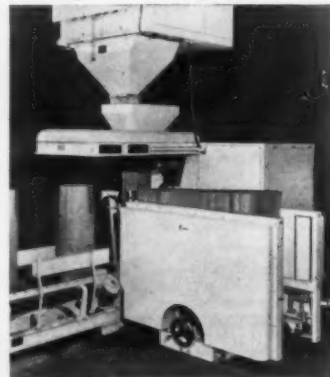
Circle 336 on Reader Service Card

also can use the parts either as single or double units. There's the main frame with a sliding drop plate. Other parts include a blade assembly for folded cap cartons, a finger assembly for wire bound crates, folding forks for pallets, a drop plate extension assembly, and a carriage mounting assembly. The attachment gives a wide range of pick up heights, from 14 to 75 inches.

Basiloid Products Corp.

### How to Mechanize Bagging

The Auto-Mac multiwall bag feeder automatically takes open-mouth multi-wall bags to the filling hopper, holds



Circle 337 on Reader Service Card

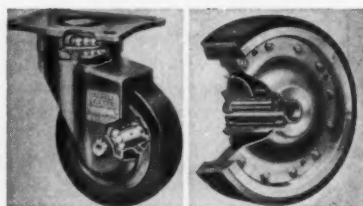
# DARNELL

CASTERS AND WHEELS



## PAY EXTRA DIVIDENDS

*you reap the long-term payoff*



### check these features

#### 1 RUBBER TREADS

... a wide choice of treads suited to all types of floors, including Darnelloprene oil, water and chemical-resistant treads, make Darnell Casters and Wheels highly adapted to rough usage.

#### 2 RUST-PROOFED

... by zinc plating. Darnell Casters give longer, care-free life wherever water, steam and corroding chemicals are freely used.

#### 3 STRING GUARDS

... Even though string and ravelings may wind around the hub, these string guards insure easy rolling at all times.

#### 4 LUBRICATION

... all swivel and wheel bearings are factory packed with a high quality grease that "stands up" under attack by heat and water. Zerk fittings are provided for quick grease-gun lubrication.



NEW  
MANUAL



Look in the  
YELLOW PAGES

## DARNELL CORPORATION, LTD.

DOWNEY (LOS ANGELES COUNTY) CALIFORNIA  
37-28 SIXTY-FIRST ST., WOODSIDE 77, L. I., N. Y.  
36 NORTH CLINTON STREET, CHICAGO 6, ILLINOIS

Circle 51 on Reader Service Card  
MATERIAL HANDLING ENGINEERING



Circle 44 on Reader Service Card

**TOP**



**PULLEY PERFORMANCE AT LOW COST**

Here is the new Hydro Crowned Pulley with the crown formed right in the steel. These pulleys give better conveyor belt performance than expensive lathe-crowned pulleys. Yet they cost no more than those with lagged crowns.

- Conveyor manufacturers: save up to \$3 a pulley.
- Conveyor purchasers: specify these pulleys for better belt tracking, no pulley maintenance and longer life.

For complete information, write: Dept. F  
(Patents applied for.)

**THE CHANTLAND COMPANY**  
HUMBOLDT, IOWA U.S.A.

them in position for filling, then delivers the filled bags ready for closing at speeds up to 16 bags a minute. It takes a wide range of bag sizes, 50 lb and up. Easy loading magazine holds a large supply of bags. Simple controls are easy to operate. Handwheels adjust bag width and length; no other adjustments needed. It handles bags for most free-flowing products. You can use it on almost any bag packers with minor variations.

Bemis Bro. Bag Co.

### Conveyor Loads 2 Cars/Hour

A new conveyor permits one man to load at least two box cars an hour. The company says the spring steel



Circle 338 on Reader Service Card

belts have some three times the service life of previous materials. The conveyor can be swung to right or left for high speed bag loading.

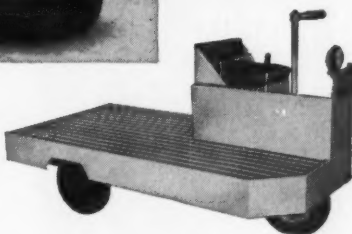
The Power-Curve Conveyor Co.



**MODEL F-40 Torque converter drive.** No shifting, smooth starts. This is a big rugged 4000 lb. capacity unit that delivers heavy duty service as a freight carrier, shuttle truck, long stock transporter, and to give mobility to equipment and personnel. 28 sq. ft. deck area.

### PRIME-MOVER

Prime-Mover transporters are marketed by industrial truck distributors. Ask there or write: Prime-Mover Co., Muscatine, Iowa.



**MODEL F-10 A 1000 lb. capacity truck.** Carries cartons, long stock, mixed freight, maintenance supplies, baggage, fire equipment. Ideal for foremen, superintendents, inspectors, supervisors. 18 sq. ft. deck area. Wisconsin engine. Industrial type combination transmission. Price: \$880 manual start; \$996 electric start. F.O.B. Muscatine, Iowa.

Circle 125 on Reader Service Card

## ONLY KELLEY ADJUST-A-LIP DOCKBOARDS Solve These DOCKLOADING PROBLEMS!

### DAMAGE TO MERCHANDISE AND TRUCKS

The ADJUST-A-LIP Dockboard lip retracts behind dock bumpers. No fixed lip, operating arms or obstructions to damage truck or end loads. No attendant necessary when carrier is positioned.

### SMASHED OVERHEAD DOORS

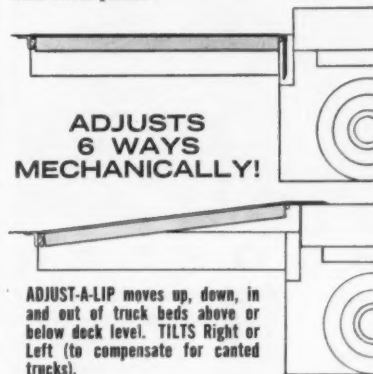
Now, trucks cannot back in and cause dockboard to suddenly raise up and smash into overhead doors, or dump men and equipment. Doors remain closed and unit remains at dock level for safe cross traffic until carrier is serviced.

### LIMITED POSITIONING HOURS

With ADJUST-A-LIP, carriers can be spotted any time day or night . . . 24 hours a day.

### EXPENSIVE WASTED MAN HOURS

An ADJUST-A-LIP saves both valuable time and labor . . . its long, wide, safe ramp speeds loading. No need to search for and haul loose plates.



**ADJUSTS 6 WAYS MECHANICALLY!**

ADJUST-A-LIP moves up, down, in and out of truck beds above or below dock level. TILTS Right or Left (to compensate for canting trucks).

**FREE** Get the FACTS! Send for details TODAY!

- ☐ **FREE KIT** — "How to Plan a Profitable Truck Dock Operation." Get booklets on Dock Safety, Modernizing, Levitation Data, Dock Designs, etc.
- ☐ **FREE SURVEY** — No obligation.
- ☐ **Facts and Figures** — Get Bulletin titled "How to get an ADJUST-A-LIP for \$1.00 a day."

Tear out and attach this coupon to your letterhead. Sign your name and mail to:

**HI-LO KELLEY COMPANY INC.**  
Adjustable DOCKBOARDS  
2139 W. MILL ROAD  
MILWAUKEE 9, WISCONSIN

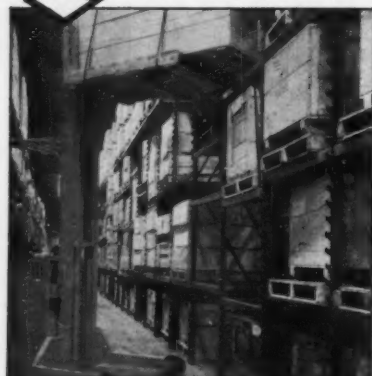
Circle 92 on Reader Service Card

# HARTMAN SYSTEMS PAY OFF!

## FLEXIRACK



COMPLETE ADJUSTABILITY  
solves storage problems.



## POWER DOCK



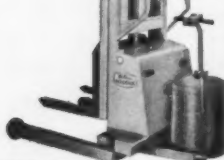
Unique 30" in and out motion  
plus 24" up and down... to  
serve any type truck quickly  
and safely.



## BOOSTER



with Power Drive  
gives big truck val-  
ue at portable lift  
cost. Capacity to  
2000 lbs.



WRITE  
TODAY  
FOR  
DETAILS.

**Hartman METAL FABRICATORS**  
131 Murray Street, Rochester 6, N. Y.

Please send literature on:

☐ FLEXIRACK ☐ POWER DOCK ☐ BOOSTER

Name.....

Firm.....

Street.....

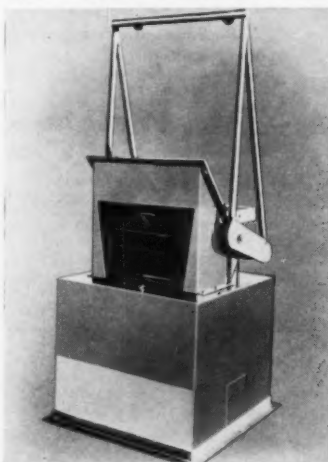
City..... State.....

Circle 87 on Reader Service Card

## NEW EQUIPMENT SECTION

### Improved Bulk Discharge

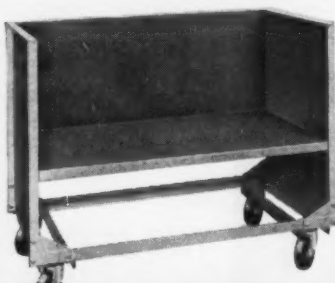
A stationary aluminum hopper  
Tote Tilt with stainless steel screw  
flight converts hermetically sealed



Tote Bins into discharge hoppers by  
tilting them 45 degrees. You get ef-  
ficient discharge of bulk products  
with sure protection against contam-  
ination.

Tote System Inc.

Circle 339 on Reader Service Card



## VERSATILE ALL-PURPOSE TRUCKS by WILDER IN QUALITY

27 standard style and 150 standard  
size platform, shelf, tray, rack,  
stake, bin, box and table trucks to  
select from. Special sizes can be  
furnished.

Write for Complete Information on  
Wilder's Full Line of Production Handling  
Equipment

**WILDER MFG. CO., INC.**  
PORT JERVIS, NEW YORK

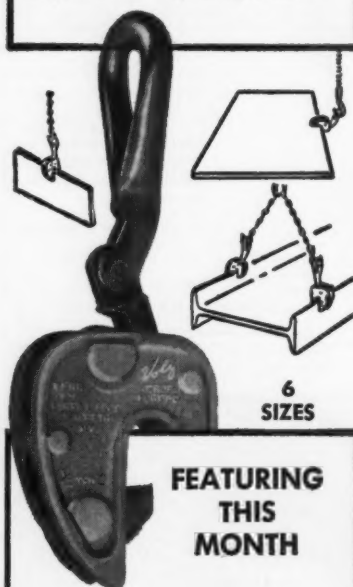
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## YOUR BEST MOVE... MOVE

with **MERRILL**  
MATERIAL HANDLING  
DEVICES FOR THE MOST  
IN

*Safety and  
Economy*

Imitated, but never duplicated,  
Merrill Lifting Clamps are Drop  
Forged to give you Safety in Hand-  
ling and Economy in Operation.



6  
SIZES

FEATURING  
THIS  
MONTH



**HORIZONTAL PLATE CLAMP**  
Rated capacity — 3 ton (6 tons  
per pair). Completely drop  
forged... Heat treated.

Over 25 Material Handling  
Devices described in our  
catalog C-2.

Ask for a copy.

**MERRILL BROTHERS**

56-74 Arnold Ave., Maspeth, N. Y.

1-60

Circle 109 on Reader Service Card

MATERIAL HANDLING ENGINEERING

## Stencils Sprayed Away



Transform used cartons, boxes and crates into clean, fresh, new looking containers. Tan colored and very opaque, Stencil-Kover sprays from an aerosol can to completely block out old stencilling and pencilled or painted markings. Material is non-clogging, has good coverage, dries quickly, and is water-proof. It affords a fast, easy way to correct stencilling errors or to re-mark and salvage overruns and unused cartons. Handy, easy-to-hold container is always ready to use.

Reynolds Ink, Inc.

Circle 340 on Reader Service Card

## Truck Listed By Underwriters'



Safety features, under classification G, include: protective fuel tank cap, special fuel line and fittings, individual breakers on all electrical circuits, and spark arrester muffler. Model F-10G is rated at 1,000 lb capacity and has a cargo area of 18 sq ft. Other features are:

heavy duty air-cooled engine, industrial transaxle drive running in oil, safety seat, dead-man brake, and clear side deck for long materials.

The Prime-Mover Co.

Circle 341 on Reader Service Card

☒ Check for VALUE in a HOIST... and You'll Buy

*Euclid*  
Series S

Competitively priced, these hoists incorporate all the desirable features of design, operation and maintenance that have characterized Euclid products for more than 50 years.

**FEATURES**

- Compact, Trouble-free.
- One-piece, heavy steel.
- Combination hoist frame and gear housing prevents misalignment or oil leakage.
- Complete motor interchangeability permits use of any (Standard NEMA "D" Flange Mount Series 180 or 210) motor with integral disc brake.

4-button station and motor driven trolley permits guiding of load.

"S" Hoists are also offered with lug and hook-on suspensions; plain trolley and hand racked. Write for data.

**THE EUCLID CRANE & HOIST CO.**  
1365 Chardon Road • Cleveland 17, Ohio

Circle 65 on Reader Service Card

APRIL, 1960



# ALL NEW Why

## IS THE NEW DILLON MODEL P SCALE SO DIFFERENT?

**Because** it's OFFICIALLY SEALED by the Los Angeles County Bureau of Weights and Measures prior to shipment! Absolute assurance that the unit you buy meets the acceptance tolerance of the United States Bureau of Standards for sealable scales as set forth in Section T.2.2 of Handbook 44. These same regulations are followed by all bureaus of weights and measures. Thus, if re-sealing is felt to be necessary in another state, no special problems are involved. Accuracy is within 1/10 of 1% of full range!

8 different capacities: 0-250, 0-500, 0-750, 0-1000, 0-2500, 0-5000, 0-7500, 0-10,000 lbs. Large, 16" diameter dial. Tare loads instantly canceled out by quick-set knob. Has heavy duty ball bearing swivel hook, sealed mechanism, strong plastic crystal over dial. Shock-proof and fully dampened against vibration. Temperature compensated. Exceptionally rugged. Truly America's finest, automatic suspension scale - yet priced LOW to suit the average shop budget!



COSTS YOU NOTHING TO INVESTIGATE. WRITE FOR PROFUSELY ILLUSTRATED BROCHURE AND FULL COLOR PICTURE.

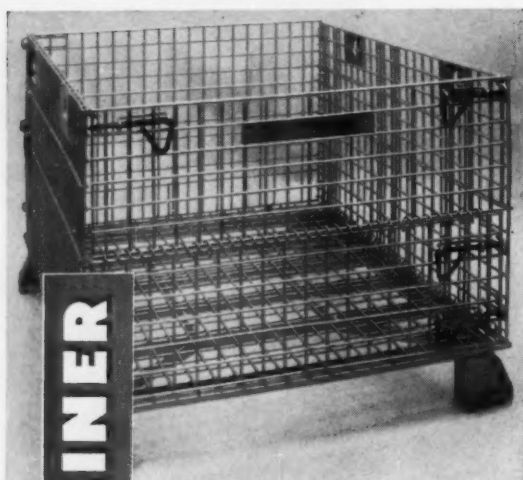
W70

**W.C. Dillon & CO., INC.**  
14568 Q KENSICK ST.  
VAN NUYS 8, CALIF.  
PHONE: STate 5-3168

Circle 57 on Reader Service Card

127





**WIRE-TAINER**

**STORING ★ HANDLING ★ SHIPPING**

- Virtually indestructible—electro-welded steel rod construction
- Saves money coming and going—easy to lift and stack, folds flat to save on return trips
- One and two-ton capacities
- Side or end openings
- Available with eyes for crane lifting, increased side heights, caster plates and casters, horizontal and vertical dividers

**FREE LITERATURE** describing all **WIRE-TAINER** advantages. Drop us a line.

**SPRINGPORT STEEL PRODUCTS COMPANY**

Springport, Michigan

**NEW EQUIPMENT SECTION**

**Conveyor Drives Turntable**

Compact turntable for Unibilt Table Top chain conveyors needs no separate drive or floor mounting. The conveyor drives it from the drive end, take-up end or intermediate location. Guard rails supplied when necessary. Turntable transfers bottles, cans, jars, small parts, etc. It is constructed with self-aligning bearings and is made in plain or stainless steel.

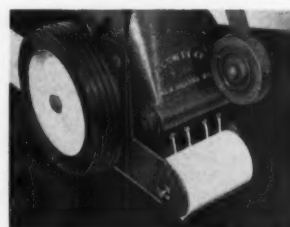


*Conveyor Specialty Co., Inc.*

Circle 342 on Reader Service Card

**New Line Painter**

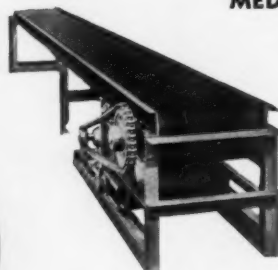
Florline Marking Machines for painting safety and parking lines are now available in  $\frac{3}{4}$  and  $2\frac{1}{2}$  gallon sizes. The  $\frac{3}{4}$  gal. machine renews lines inexpensively for owners of small plants and lots. It gives the savings of self-maintenance in lining safety aisles, stock areas and parking spaces. The  $2\frac{1}{2}$  gal size fits between the regular  $1\frac{1}{2}$  and 5 gal capacities in the line.



*H. C. Sweet Co.*

Circle 343 on Reader Service Card

More Speed  
... More Space  
with Economical  
**ULTIMATE**  
Horizontal Roller  
Bed Belt  
Conveyors



**MEDIUM DUTY ROLLER BED UNIT**

showing the simple and perfectly engineered Idler and Power Unit arrangement wherein perfect belt tension is obtained quickly. A most efficient straightaway conveyor. Also available on inclined units. Belt widths from 8" to 36" in 2" increments.

**MEDIUM DUTY  
LIVE ROLLER  
UNIT**



**ISLAND EQUIPMENT CORP. Dept. MH-4**  
P.O. Box 380276 • Miami 38, Florida

Please send information on the following:

- ☐ Roller Bed      ☐ Live Roller  
☐ Other Conveyors—Please list

Company .....  
By .....  
Address .....  
City ..... State .....

with "Package" Power unit attached. Demanding less horsepower, the floating action rollers increase belt and bearing life.

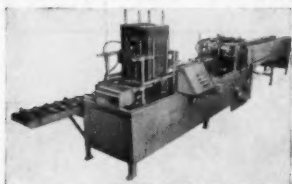
Widths from 8" to 36".

Mail coupon for detailed information.

Circle 85 on Reader Service Card



### Casing Line Fully Integrated



Twenty-five cases per minute are automatically opened, erected, loaded, and sealed by FMC's Model 41 casing machine. It will case a wide range of package types and sizes like those used for cake mixes, detergents, cereals, and even bar soap. Feeding is from a vertical stack of up to 200 flat cases with positive vacuum cups to strip off the bottom case. Accumulating and loading is done pneumatically; loading is from the end or side. A no-case-no-glue control makes glue application uniform.

FMC Packaging Machinery Division

Circle 344 on Reader Service Card

### Caster Swivels Lock



Casters that swivel or lock at a finger touch are offered by Hamilton. Any number of locking slots can be milled into the caster yoke to give controlled movement in any direction. The slots are engaged by a spring-loaded finger-operated plunger. The plunger re-

tracts and seats in a notch to release the yoke. Multi-Position Swivel Lock is available in capacities to 3,000 lb and different wheel types.

Hamilton Caster & Mfg. Co.

Circle 345 on Reader Service Card

Circle 49 on Reader Service Card

## Q. WHAT IS IT? WHAT'S IT FOR?



A.

Frankly, we don't know.

The customer didn't tell us. But he wanted 1,000, and we made them at an amazingly low cost. Special sizes and shapes of shop boxes are economically produced by our "Chem-Board" process of rigidizing hi-test corrugated board to remarkable strength.

We make many standard size tote boxes . . . nesting, stacking and vertical sided . . . but we'll custom-make any box your product or use calls for.

More and more famous name industries are using Convoy Tote Boxes. Try us.

**CONVOY, INC.**

CANTON 6, OHIO

P. O. Station 8, Box 216-F,



## **SUPER STRENGTH** in Light Metal with **LANGSENKAMP'S** **ALUMINUM** **DOCKBOARD**

. . . achieves a tensile strength of 65,000 p.s.i.—more than steel plate!

**STILL**  
**AS LOW AS...**  
**\$49<sup>00</sup>**  
(24" x 48" size)

- No maintenance problems
- Flexible for any situation
- Permanent non-skid sand and latex coating (optional)



### **EXTRA SAFETY FEATURE**

The **ONLY** lightweight metal dockboard with built-in warning signal. It flexes and sets when overloaded.

**WRITE FOR THE FACTS  
IN OUR NEW FOLDER...  
"DOCKBOARD 1960"**

**F. H. LANGSENKAMP COMPANY**

227 East South Street • Indianapolis 4, Indiana

Circle 94 on Reader Service Card

**There's a  
HYTROL CONVEYOR  
UNIT OR SYSTEM  
TO FIT  
YOUR NEEDS  
EXACTLY!**



Hytrol engineers start with the problem — a study of your facilities as related to the conveying job to be done. More often than not, your low-cost solution is found in a unit or combination of standard units in the Hytrol catalog: Powered belt models, horizontal and inclined, floor-to-floor models, portable stackers, boosters, wheel and roller conveyors, complete accessories. Speedy delivery through distributors in major cities.

**HYTROL CONVEYOR CO., Inc.**  
1953 S. 54th Street  
Milwaukee 19, Wisconsin

You can  
**BUILD  
CHANGE  
EXPAND  
MOVE**  
your storage racks  
with only a  
**HEX KEY,  
HACKSAW  
and  
RACKMASTER®  
FITTINGS**

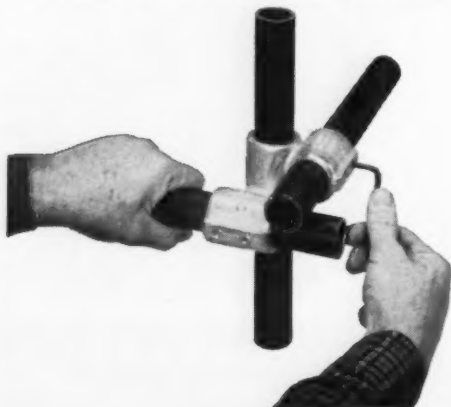


**RACKMASTER FITTINGS** cut rack-building time as much as 60% by eliminating threading and welding. They cut other rack-building costs, too—

- pipe is 100% salvageable
- pipe-cutting is reduced to a minimum
- regular warehouse crews can build racks
- slip-on feature simplifies design and construction

**RACKMASTER** is stocked by leading distributors. Write for details on Rackmaster and multi-purpose NU-RAIL Fittings Bulletin 32FL

THE HOLLAENDER MANUFACTURING CO., 3841 Spring Grove Ave., CINCINNATI 23, O.



Circle 80 on Reader Service Card

## NEW EQUIPMENT SECTION

### Arc Burner Repairs Batteries

Easily toted in a tool box, the new Exide carbon-arc burner repairs industrial storage batteries right on the job. Six-volt power for the flameless electric burner can come from the battery being repaired (if there's enough charge) or from an auto battery. A carbon tip fuses lead intercell connectors and other lead parts. It is faster and more convenient than drilling.

*Exide Industrial Division*



Circle 346 on Reader Service Card

### Coder Marks 35 Units Per Minute

The Algene Spot Coder is designed for heavy industrial use and marks cartons, cases or products right on the assembly line. The one-piece unit acts as its own guard rail and contains a large ink fountain, a no-drip ledge and type reserve. It is said to maintain perfect register and printing press quality using interchangeable rubber type or strips for quick changing. Printing area is 1" by 12" and up.

*Algene Marking Equipment Co.*



Circle 347 on Reader Service Card

*Distributors  
Wanted!*

**Efficient**

**H.O.K. Brand**

- ★ **PATENTED Auto Safety Chain Hoist**
- ★ **Chain Hoist & Trolley**
- ★ **Electric Chain Hoist**

**Capacity: 1/4—30 Ton**

For complete details, write —  
Manufacturers:

**OKAZAKI MFG. CO., LTD.**

4, Misaki-cho, Sumiyoshi-ku, Osaka, Japan



Circle 122 on Reader Service Card  
**MATERIAL HANDLING ENGINEERING**

## Medium-Size Straddle Truck



Shorter turning radius and higher top speed are features of the M200E Straddle Truck carrier. 164 hp moves 20,000 lbs at up to 52 mph over the road. Four-wheel power steering and power brakes are standard. Many components of maker's 30,000 lb model are shared including power plant,

drive train and hoist system. Options include LP-gas fuel system, a diesel engine and other specials.

*Hyster Company*

Circle 348 on Reader Service Card

## Water-Activated Plastics Adhesive

Re-Tac adhesive dries transparent and tack-free when applied to acetates and other plastic films. But when moistened with water it immediately develops an aggressive tack making it possible to stick the acetate or plastic to glass, metal, wood, paper, and other materials.

*Adhesive Products Corp.*

Circle 349 on Reader Service Card

## Pushbutton Runs Car Shakeout

A hydraulic cylinder, exerting 14 tons, pushes a vibrating head against the side of railroad hopper cars to shake loose compacted or frozen material. The H-R Trackside shakeout is anchored in the ground alongside the rails and push-button controlled for safe operation. No man-handling of a heavy suspended weight is required. The unit weighs 2400

## SAFER HANDLING of INDUSTRIAL LIQUIDS!



Eliminate in-plant accidents caused by slick floors and spilled inflammables! This TOKHEIM Hand Pump, for use on drums or skid-tanks, has 8' hose—or spout outlet—prevents dangerous, wasteful slopping of oils and many other liquids. Speeds production. Pumps 20 gallons per 100 strokes. Ask your dealer, your Tokheim representative or write for list of liquids.



General Products Division

**TOKHEIM CORPORATION**

DESIGNERS AND BUILDERS OF SUPERIOR EQUIPMENT SINCE 1901

1668 Wabash Avenue

Fort Wayne 1, Ind.

Subsidiaries: Tokheim International, A.G., Lucerne, Switzerland;  
GenPro Inc., Shelbyville, Indiana; Tokheim of Canada, Ltd., Toronto, Ontario

Circle 151 on Reader Service Card

APRIL, 1960



## FREE THEM TO DO OTHER JOBS



The Turbo-Sweep "40"

Manual  
20" and  
28" Sweep



Motorized  
20" and  
28" Sweep

Slashes man hours and sweeping costs! Sweeps up to 50,000 sq. ft. per hour in dirt, trash, paper, scrap . . . all debris. Long wearing bristles, rugged steel construction. A model for every individual need.

Manufactured by the makers of famous Parker Lawn Sweepers

**Parker**  
FLOOR SWEEPERS

## FREE DEMONSTRATION IN YOUR OWN PLANT

The Parker Sweeper Company, Dept. MHE-4, Springfield, Ohio

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

Circle 124 on Reader Service Card

Circle 69 on Reader Service Card



Frontier Slotted Angle is available in standard or heavy duty . . . baked enamel or galvanized. Self-locking nut permits erection with only one wrench. Catalog SA-100 gives complete details and load charts.



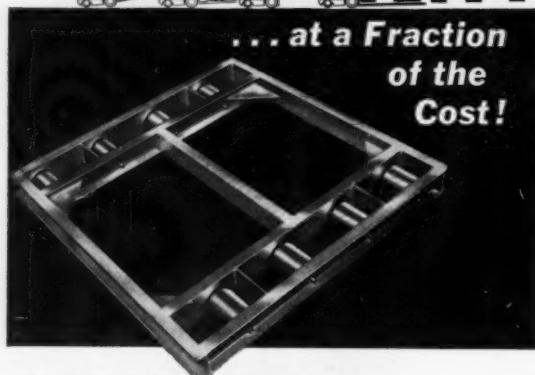
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**FRONTIER**

MANUFACTURING CO.  
P. O. Box 13266  
Dallas 20, Texas

Manufacturers of Steel Shelving & Other Products

Power Truck **MOBILITY**



... at a Fraction of the Cost!

**MAGLINER MAGNESIUM PALLET DOLLIES** free-up your power equipment for the big jobs and longer hauls. Put a Magliner under every pallet load and its ready to roll . . . quickly, easily, *economically*. A small investment that pays big dividends, Magliners are the practical solution to loading bottlenecks . . . high loading costs. Made of magnesium, Magliner pallet dollies are easily handled by one man . . . carry loads up to 4,000 lbs., safely, smoothly on large 3 1/4" rollers. Tough, rugged, welded magnesium construction. Dependable, long-life service! 14 standard models and sizes.



Put it on a Magliner and Keep it Mobile

Write for Bulletin P8-1

Magline Inc. • P.O. Box 374 • Pinconning, Mich.

Canadian Factory—Magline of Canada Ltd., Barrow, Ont.

Circle 104 on Reader Service Card

## NEW EQUIPMENT SECTION

lb, has a 7 1/2 hp high-torque vibrator drive, and a 3 hp high-torque pump drive. It will shake-out 10 hopper-cars a day of coal, ore, aggregates, etc.

Hewitt-Robins, Inc.

Circle 350 on Reader Service Card

### Truck Speedy, Compact

Featured in this line of Ride-On low lift platform trucks are compactness and speed. With a short length of 40 3/4 inches (excluding riding platform) and speeds up to 6 mph, they are available in 2-, 3-, 4-, and 5,000 lb capacities. Platform available in all widths, lengths, and lowered heights; with a minimum lowered height of 6 1/2 inches. Four-inch lift is standard. Both drive and trail wheels steer for short turn radius.



Wright-Hibbard Industrial Truck Co.

Circle 351 on Reader Service Card

### Remove Drum Heads the Easy Way

No longer must you remove steel drum heads with hammer and chisel. The Wizard hand tool works like a giant can opener. It cuts the heads from drums cleanly, leaving a smooth, lapped edge that needs no further finishing. It takes less than two minutes for the average drum. You can easily adjust it for any drum from 5 to 60 gallons. If you

## THE SENSATIONAL M-W COPPER-TONE lightweight HAND TRUCK

- Three times the strength of steel!
- Comparable in weight to the lightest magnesium and aluminum trucks!



### Utility Hand Trucks

A complete line. Copper-Tone or steel models available with single or double handles; open or closed plate; air, zero pressure or solid rubber tires; tubular stair climbers and many other features. Capacities up to 1500 lbs.

Copper-Tone Trucks have a lifetime copper finish—the best-looking trucks in the land.

Considering their lightness of weight and tremendous strength — Copper-Tone Trucks are the least expensive fine hand trucks on the market.

WRITE FOR OUR NEW COPPER-TONE BULLETIN

M-W



INCORPORATED

204 Jefferson St. • Washington, Mo.

MOELLENBROCK & WILKE, INCORPORATED

Circle 102 on Reader Service Card

MATERIAL HANDLING ENGINEERING



prefer, you can remove the inner top and upper seam as a unit. The tool is powered by a 1/3 hp gearmotor, and is easily handled by one man.

*Krist Machine Works*

Circle 352 on Reader Service Card

### Moves Pallets



A "Palletflo" conveyor has been designed to take an average pallet. The company says it will roll at controlled speed despite split, warped, broken boards, and projecting nails. Slopes as low as 1/8 inch per foot may be adequate, and no slope is possible for a "push line." This gravity conveyor can handle up to 3,000 pounds. The installation includes rails, side rails and supports, all adjustable. The rails are 10 feet long and with bearing wheels on 3, 4, 5, and 6 inch centers.

*M-H Standard Corp.*

Circle 353 on Reader Service Card

### Clean-up Made Easier

The Sani-Mop Vac System insures ideal housekeeping conditions, says the manufacturer. It eliminates scraping and combing of dry-mops by hand. Dust, lint and material swept up are simply drawn by vacuum through a slotted plate in the floor. There are only half a dozen components to the compact system. Easily installed, it needs little maintenance and occupies minimum space.

*U.S. Hoffman Machinery Corp.*

Circle 354 on Reader Service Card

### Gas Fork Truck is Compact

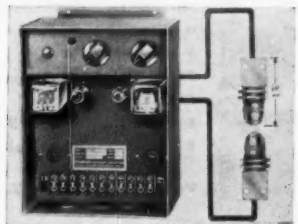


Indoor tiering and handling requirements in compact areas are met by the C-25 Clarklift. It turns in a 64 inch radius and needs but 75 inches over the load length for right angle stacking. Capacity is 2500 lb. A 4-cylinder gas engine tied to an automatic Hydrotork Drive and Clark torque convertor moves it along at 8 mph forward or reverse. It will take a 23 percent grade fully loaded. Final gear reduction at the drive wheels reduces axle shaft windup.

*Clark Equipment Company*

Circle 355 on Reader Service Card

### Electric Eyes Flexible



Miniaurized Robot-Eye photo-electric controls are easily mounted for inspection, counting and regulating devices. Operation is by beam interruption or by reflection. Light source, photocell and amplifier connect together by plug-ins; permit wide variety at minimum expense. Amplifiers use tubes or transistors. Time delays and count registers also plug in. Speeds go to 1000 per minute, operating range to 100 ft.

*Standard Instrument Corp.*

Circle 356 on Reader Service Card

Circle 137 on Reader Service Card

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where and when

**POWER**  
you need it...

specify **RUGER**  
**MULTI-PURPOSE CRANES**

Ruger Hydraulic Cranes reach in-under-over... unload trucks... lift motors, machinery and crates... lay pipe... tilt drums... mate dies... combine all your lifting and transporting problems into one operation. Manual and electric models available are floor... truck... convertible floor and truck... short mast... high mast... wide base... adjustable leg and retractable outrigger (for side lifting). WRITE FOR DETAILS AND PRICES.

**NEW STACK-OR-LIFT**  
**ACCESSORY**  
AVAILABLE FOR 1/2, 1  
AND 2 TON MODELS

THE CRANE WITH  
1000 USES

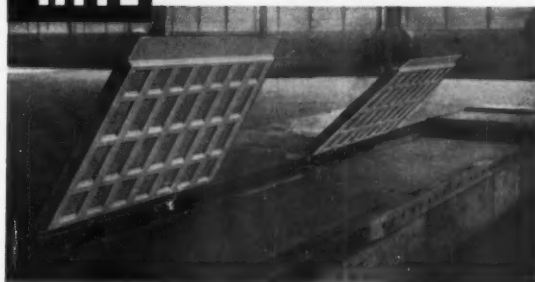
**RUGER**  
**EQUIPMENT, INC.**

8794-RKE

601 W. Fourth Street • Uhrichsville, Ohio

**RITE-  
HITE**

manually operated  
**MECHANICAL DOCK RAMPS**



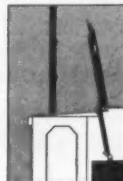
**TRAILER DOORS CAN BE OPENED AFTER**  
**SPOTTING TRAILER AT DOCK.**

Ramp platform swings up to nearly vertical position, provides ample room to open trailer doors.

- NO LEVERS PROJECT ABOVE DOCK FLOOR.
- ONLY 3 MOVING PARTS—NO MAINTENANCE.
- EASY TO OPERATE—ALMOST EFFORTLESS.
- SIDE-TO-SIDE PLATFORM ADJUSTMENT.

**OVERHEAD DOORS**  
CAN CLOSE IN FRONT  
OF RAMP for protection against illegal entry, drafts, fire hazards.

Write, Dept. M460



You can select Rite-Hite with confidence that you're getting the most value for your money. 5 manual models—6 automatic models—all have full 10-ton capacity.

**RITE-  
HITE**  
DIVISION

**LOOMIS MACHINE COMPANY**  
133 EAST FOURTH STREET, CLARE, MICHIGAN  
Circle 96 on Reader Service Card

## CLASSIFIED ADVERTISING

Rates: Cost of all ads in this section is \$20 for the first inch and \$15 for each additional inch or fraction. Rates for display ads in this section will be sent on request. All classified advertising is payable in advance.

## LINES WANTED

**HAVE NATIONAL DISTRIBUTION AVAILABLE!** If you can use capital and successful marketing manpower, we are interested in your product. Write giving full particulars. Write c/o MATERIAL HANDLING ENGINEERING, Box 4260.

## FOR SALE

**USED CONVEYOR EQUIPMENT**—Two Jarvis Webb Worm-Maag-Speed Reducer Power units. 5 hp, 220-440 volts. Adjustable from 40 feet to 120 feet per minute. Any reasonable offer will be considered. Write F. K. Meyer, 5470 Hecla Ave., Detroit 8, Michigan or call Tyler 6-1100.

## HELP WANTED

**Industrial Engineer.** Materials Handling Engineering Division has opening for man under 35 with I. E. or M. E. degree. Must also have minimum of five years experience in methods, material handling, layouts, etc. Send outline of education, experience, personal data, and salary requirements to W. H. Newcomer, Employment Manager, The Gates Rubber Co., 999 S. Broadway, Denver 17, Colorado.

Manufacturers representatives for central and eastern U. S. for light and medium duty hand trucks and drum trucks. Write c/o MATERIAL HANDLING ENGINEERING, Box 4160.

## DISTRIBUTORS WANTED

More than 50% of users have re-ordered GUIDON Boltless Adjustable Storage Racks—convincing proof of their top quality, low cost, ease of installation and

built-in strength (their leadership as the most rugged racks yet offered is illustrated by the fact that we know of no GUIDON user who has ever switched to another type of rack.) If you are interested in GUIDON'S proven customer acceptance and sure-fire profit possibilities, write for complete information and our generous distributor offer to Frazier Industrial Co., P. O. Box 136, Bloomfield, New Jersey.



Sorry boss! Thought you were a prowler.

## HydroLectric the Modern Truck

... with the  
**Greatest Flexibility  
to Application**

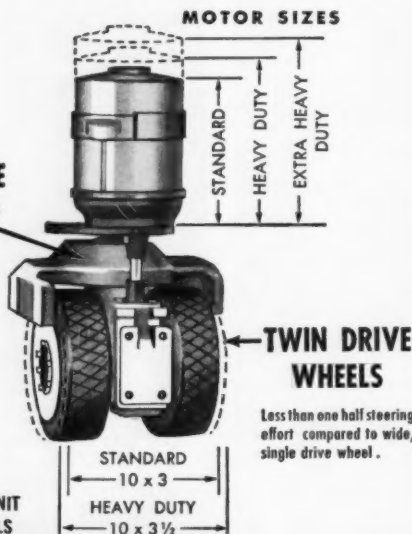
**MAKE A COMPARISON**

**3 GEAR RATIOS AVAILABLE**  
without changes in Gear Centers



- ★ Instantaneously braking with the handle in any position.
- ★ Maintenance simple and infrequent — designed to make it easy to service brushes, contacts, tires — within minutes.

THE EXCLUSIVE DYNA-DUAL POWER UNIT IS INTERCHANGEABLE ON ALL MODELS



Less than one half steering effort compared to wide, single drive wheel.

**LIFT TRUCKS, INC.**

CINCINNATI 14, OHIO



Circle 95 on Reader Service Card

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MATERIAL HANDLING**

**USE...  
BIGELOW-GARVEY  
COLLAPSIBLE  
TIGHT-CORNER  
PALLET BOXES**

**THEY'RE REUSABLE**

- Economical
- Safe and Neat
- More Convenient
- Quickly Assembled
- Handles up to 5000 lbs.
- Collapsible When Not in Use
- Specially Made For Your Needs

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UNISTRUT framing plus traveling conveyor provides tailor-made storage and easy handling of heavy metal stock from floor to ceiling.

**Hughes Aircraft does it with  
UNISTRUT®  
custom-built racks and  
a one man conveyor system**

Hughes Aircraft had a tricky materials handling problem that was solved with custom-built UNISTRUT racks and a unique conveyor system. With UNISTRUT framing, Hughes created custom-designed racks to fit varying stock sizes and shapes, using their entire cubic area from floor to ceiling.

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Savings like these can be yours! The experience of the Unistrut organization in solving materials handling problems is at your service. Write today for complete information.

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Pioneer in Adjustable Metal Framing

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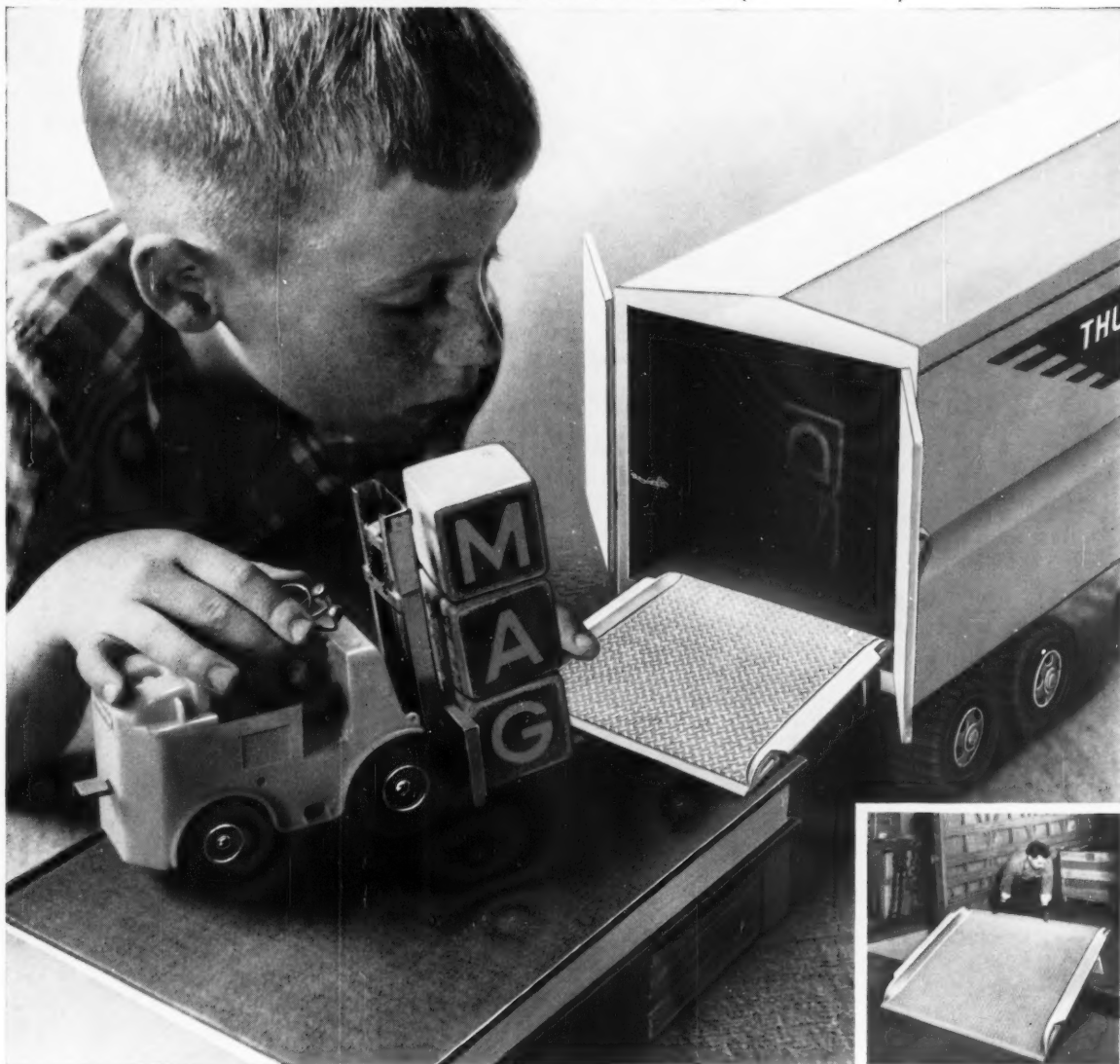
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